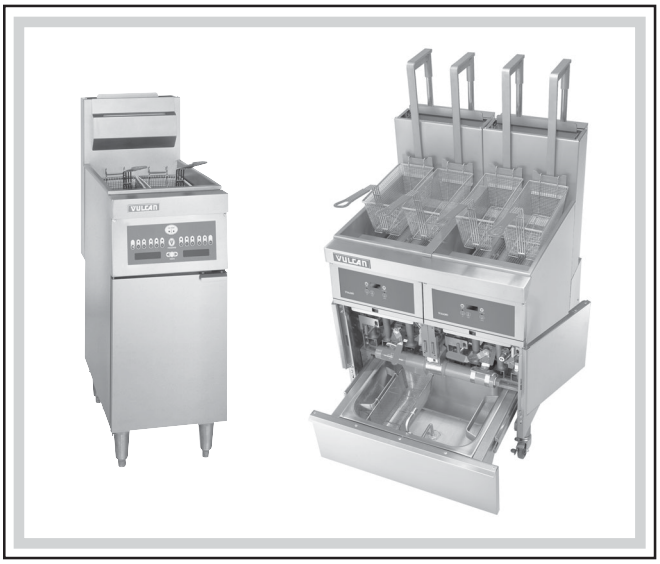
SERVICE MANUAL



GR SERIES GAS FRYERS WITH TRIDELTA CONTROLS

MODEL	ML	MODEL	ML
GRD25	052513	GRD35F	126732
GRD35	052080	GRD45F	126735
GRD45	052081	GRD65F	126738
GRD65	052082	GRD85F	126741
GRD85	052306	GRC35F	126733
GRC35	052083	GRC45F	126736
GRC45	052084	GRC65F	126739
GRC65	052085	GRC85F	126742
GRC85	052307		

- NOTICE -

This Manual is prepared for the use of trained Vulcan Service Technicians and should not be used by those not properly qualified. If you have attended a Vulcan Service School for this product, you may be qualified to perform all the procedures described in this manual.

This manual is not intended to be all encompassing. If you have not attended a Vulcan Service School for this product, you should read, in its entirety, the repair procedure you wish to perform to determine if you have the necessary tools, instruments and skills required to perform the procedure. Procedures for which you do not have the necessary tools, instruments and skills should be performed by a trained Vulcan Service Technician.

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For additional information on Vulcan-Hart Company or to locate an authorized parts and service provider in your area, visit our website at www.vulcanhart.com.

VULCAN-HART COMPANY, P.O. BOX 696, LOUISVILLE, KY 40201-0696, TEL. (502) 778-2791

FORM 25114 Rev.A (07-03)

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GENERAL

INTRODUCTION

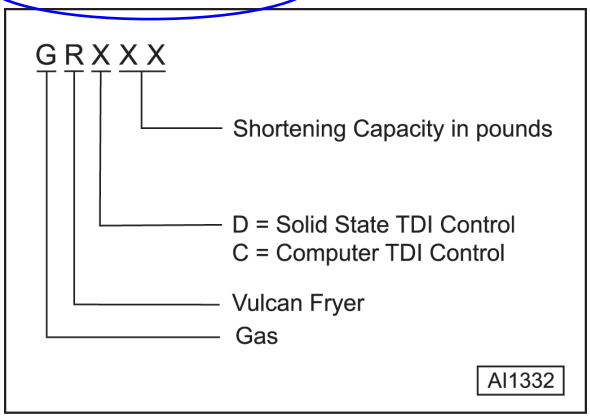
This Service Manual covers specific service information related to the models listed on the front cover. Current production model fryers are built using a solid state control and computer control from Tridelta Industries (TDI).

SINGLE FLOOR MODEL FRYERS

Fryers with the Filter-Ready option installed, use the Mobile Filter. For service information related to the Mobile filter, refer to F24599 “MOBILE FILTERS”.

An RO Frymate (dump station) can be configured in a battery with fryers 15 1/2 inches or 21 inches in width.

Model Designations



Models, Features and Options

MODEL	FEATURES					OPTIONS
	FRYER WIDTH (INCHES)	FRYING OIL CAPACITY (POUNDS)	FRY TANK	COOKING CONTROL	COOK TIMER (MM:SS)	AUTOMATIC BASKET LIFTS
GRD25[1]	10 1/2	25-30	Full	Solid State	0-99:59	Single
GRD35	15 1/2	35-40	Full	Solid State	0-99:59	Single or Dual
GRD45	15 1/2	45-50	Full	Solid State	0-99:59	Single or Dual
GRD65	21	65-70	Full	Solid State	0-99:59	Single or Dual
GRD85	21	85-90	Full	Solid State	0-99:59	Single or Dual
GRC35	15 1/2	35-40	Full	Computer	0-99:59	Single or Dual
GRC45	15 1/2	45-50	Full	Computer	0-99:59	Single or Dual
GRC65	21	65-70	Full	Computer	0-99:59	Single or Dual
GRC85	21	85-90	Full	Computer	0-99:59	Single or Dual
RO15 (Frymate)	15 1/2					
RO21 (Frymate)	21					
RO21S (Frymate)	21					

NOTE: 1. Available in battery configurations only.

KLEENSCREEN FILTERING SYSTEM

The new Kleenscreen filtering system has been integrated into the GR Series fryer battery. The filter is housed in a pull-out drawer assembly at the base of the fryer. The filtering components in the drawer include a stainless steel filter tank, crumb-catch basket and a dual element mesh filter screen. With the filter drawer closed, a self-seating oil return line provides the path to return the filtered oil to the fry tank.

This system is designed to provide a thorough and easy method for filtering fryer oil.

Some of the benefits include:

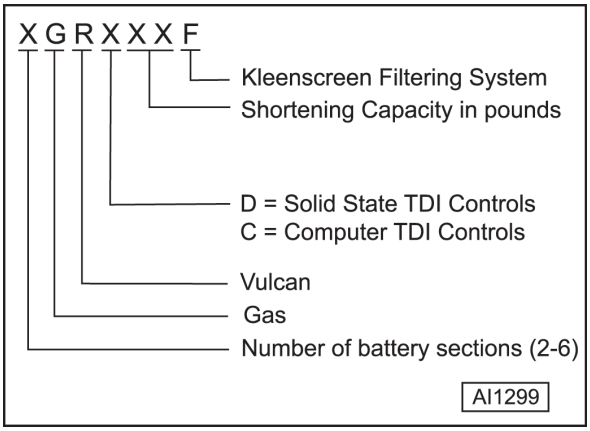
- Self-contained system eliminating the use of external filter equipment.
- Paperless filtering system.
- Easy to clean and low maintenance.

The fryer battery still utilizes many of the same components as the Vulcan GR series fryers.

Kleenscreen fryer batteries are available in a minimum of two and a maximum of six fryer sections. The fryer size of each section is identical.

An RO Frymate (dump station) can also be included as one or more of the sections.

Model Designations



Models, Features and Options

MODEL	FEATURES						OPTIONS
	FRYER WIDTH (INCHES)	FRYING OIL CAPACITY PER FRYER (POUNDS)	FILTER PAN CAPACITY (POUNDS)	FRY TANK	COOKING CONTROL	COOK TIMER (MM:SS)	AUTOMATIC BASKET LIFTS
2GRD35F[1]	31	35-40	80	Full	Solid State	0-99:59	Single or Dual
2GRD45F[1]	31	45-50	80	Full	Solid State	0-99:59	Single or Dual
2GRD65F[2]	42	65-70	130	Full	Solid State	0-99:59	Single or Dual
2GRD85F[2]	42	85-90	130	Full	Solid State	0-99:59	Single or Dual
2GRC35F[1]	31	35-40	80	Full	Computer	0-99:59	Single or Dual
2GRC45F[1]	31	45-50	80	Full	Computer	0-99:59	Single or Dual
2GRC65F[2]	42	65-70	130	Full	Computer	0-99:59	Single or Dual
2GRC85F[2]	42	85-90	130	Full	Computer	0-99:59	Single or Dual
RO15 (Frymate)	15 1/2						
RO21 (Frymate)	21						
RO21S (Frymate)	21						

NOTE: 1. For each additional fryer section, add 15 1/2 inches to the width. 2. For each additional fryer section, add 21 inches to the width.

SPECIFICATIONS

Electrical

- 120VAC supply. A 24VAC transformer provides power for the fryer controls, basket lift controls (if installed) and the filtering controls on Kleenscreen™ battery fryers.
- Kleenscreen filter models require a separate 120VAC connection for the filter pump motor (5 amp draw).

Gas Pressures

Manifold (per fryer section):

- Natural - 4" W.C.
- Propane - 10" W.C.

Building supply pressure (Min):

- Natural - 5" W.C. (7" W.C. battery units)
- Propane - 11" W.C. (12" W.C. battery units)

NOTE: Propane or Natural gases -14" W .C. (Max).

Input BTU Rating

GR SERIES	NO. OF TUBES	BTU/HR/SECTION
GRD25	2	60,000
GRD35, GRC35	3	90,000
GRD45, GRC45	4	120,000
GRD65, GRC65	5	150,000
GRD85, GRC85	5	150,000

TOOLS

Standard

- Standard set of hand tools.
- VOM with AC current tester.

NOTE: Any quality VOM with a sensitivity of 20,000 ohms per volt can be used.

- Temperature tester (thermocouple type).
- U-Tube Manometer.

Special

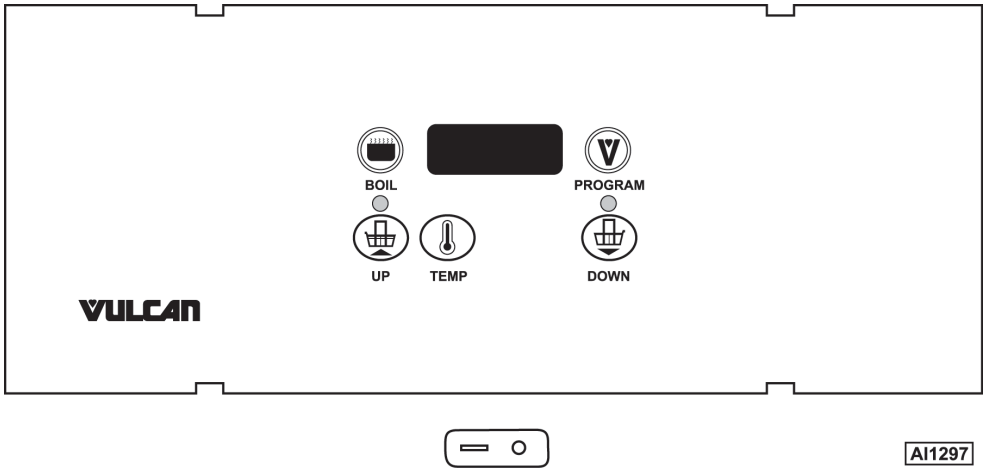
- Field service grounding kit P/N TL- 84919.
- Loctite 242 P/N 520228 or equivalent.
- Burndy pin extraction tool RX2025 GE1; Newark Electronics Catalog Number 16F6666. Used for removing pin terminals on Burndy connectors.

CONTROL PANELS

Solid State

- Five product/programming keys: Left basket (up arrow); Right basket (down arrow); Temperature; Program and Boil.
- Four digit display window that indicates fryer status, time left to cook, and actual or set point temperature.
- Two LED lamps that illuminate when a basket timer is being programmed or blink to when a timer is activated (left or right basket).
- Boil key for manual mode “boil out” cleaning of fry tank.

SOLID STATE CONTROL “D” MODEL

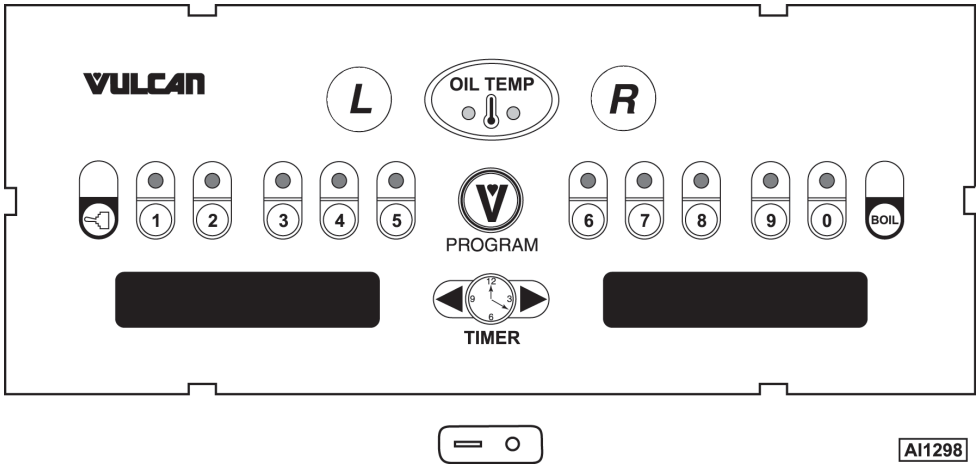


Computer

- Fifteen product/programming keys allow individual product cooking times for up to ten different products: Product/ Programming keys 1 thru 0; Toggle; Boil; and two Timer keys.

  Left & Right Arrows - used to initiate programming of time and checking stored values (left 1-5 & right 6-0).
- Left & Right displays that indicate actual or set point temperature, remaining times, operating mode, and completion of preheat period.
- Two LED lamps on the “OIL TEMP” key that indicate “heat on” and ten individual LED lamps above each of the ten product/programming keys: LED’s blink when a product key is activated, solid when using a key for programming.
- Boil key for manual mode “boil out” cleaning of fry tank.

COMPUTER CONTROL “C” MODEL



REMOVAL AND REPLACEMENT OF PARTS

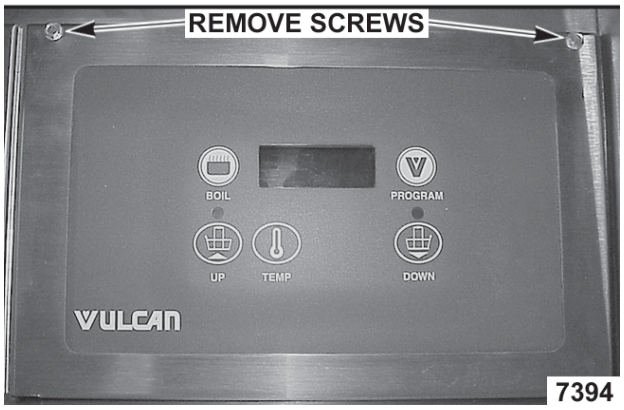
COVERS AND PANELS

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

Control Panel

1. Remove screws at top of control panel and rotate panel downwards.

SOLID STATE "D" MODEL SHOWN



2. Disconnect wiring harness then lift panel off.

NOTE: The cooking control, control box, interface board and wiring harness are now accessible.

3. Reverse procedure to install.

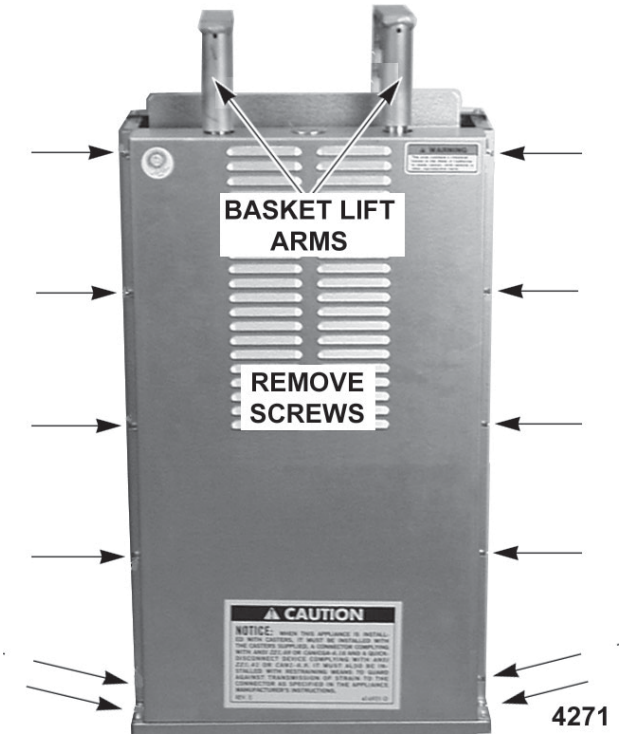
Basket Lift Covers

WARNING: SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

WARNING: ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH A SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

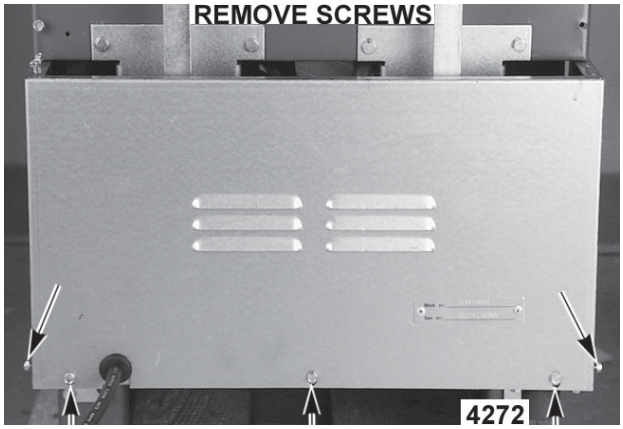
NOTE: This procedure applies to fryers with automatic basket lift option only.

1. Disconnect gas line at the fryer.
2. Move fryer out from wall to access basket lift covers.
3. Remove basket assembly lift arms from support rods.
4. Remove screws securing upper cover to flue wrap.



A. Lift upper cover over support rods and place cover to the side.

5. Remove screws securing lower cover to motor mounting base.



6. Reverse procedure to install.

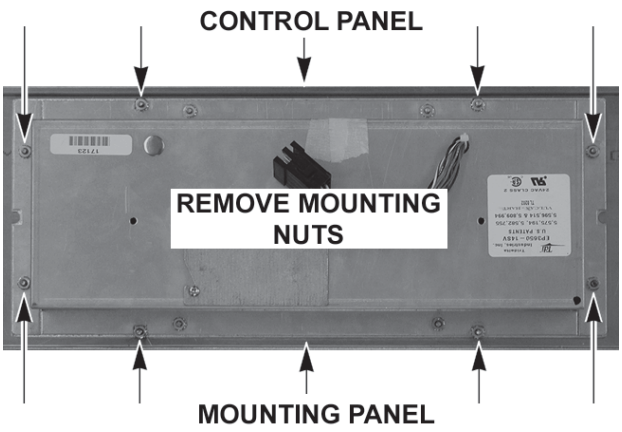
COOKING CONTROLS

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

CAUTION: Certain components in this system are subject to damage by electrostatic discharge during field repairs. A field service ground kit is available to prevent damage. The field service grounding kit must be used anytime the control board is handled.

1. Remove the control panel as outlined in “CONTROL PANEL” under “COVERS AND PANELS”.
2. To Remove:
   A. Solid State Control - proceed to step 3.
   B. Computer Control - Remove mounting nuts securing computer control and mounting panel to front control panel. Proceed to step 4.

COMPUTER CONTROL "C" MODEL



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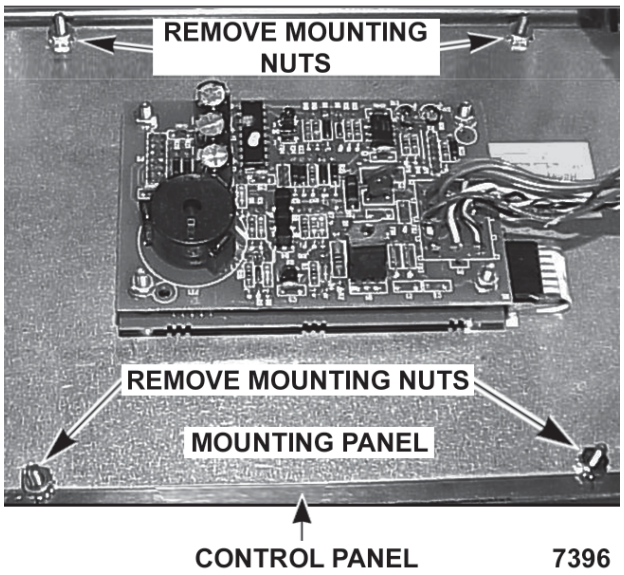
3. Remove mounting nuts securing solid state control to mounting panel.

SOLID STATE CONTROL "D" MODEL



7396

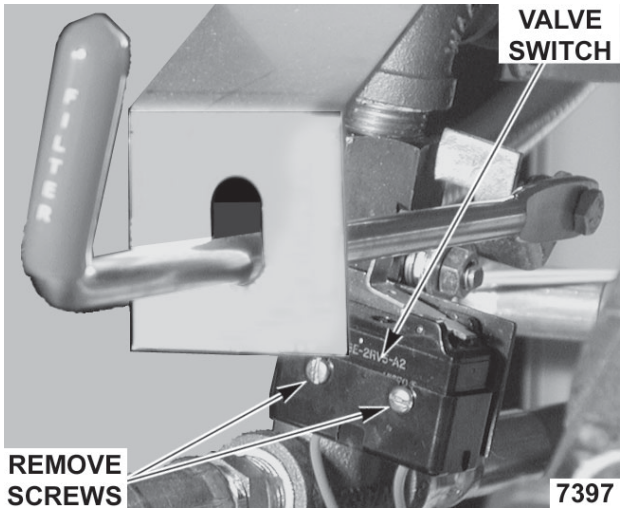
4. Lift the control with mounting panel attached, off the front control panel.
5. Reverse procedure to install and check for proper operation.

NOTE: If a replacement control was installed, program the control with the customers’ settings and products.

FILTER VALVE AND DISCARD VALVE SWITCHES

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

1. Open the door to the fryer section being serviced.
2. Remove burners closest to the switch being serviced (if applicable) as outlined under “GAS BURNERS”.
3. Disconnect lead wire connector (2 pin) from the appropriate switch.
4. Remove switch mounting screws.



5. Reverse procedure to install and check for proper operation.

NOTE: Switches are not adjustable.

GAS BURNERS

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

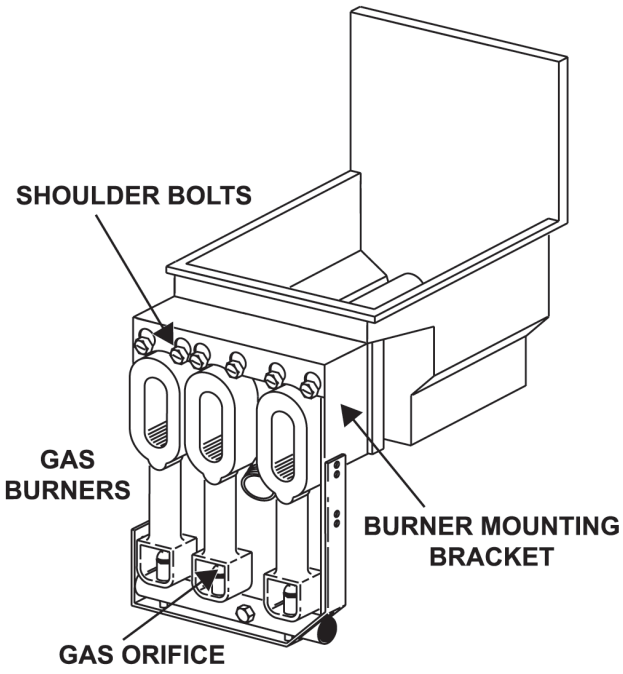
WARNING: SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

1. Open the door to the fryer section being serviced.
2. Remove gas burner shipping ties (if installed).

3. Lift gas burner up and tilt the top of burner toward fryer until it clears the gas orifice at the bottom.

NOTE: The burners mount to the fryers’ burner mounting bracket by shoulder bolts that rest in the keyway slot.

35 LB. SINGLE TANK ASSEMBLY*



*PARTIAL ASSEMBLY SHOWN

AI1300

4. Reverse procedure to install.

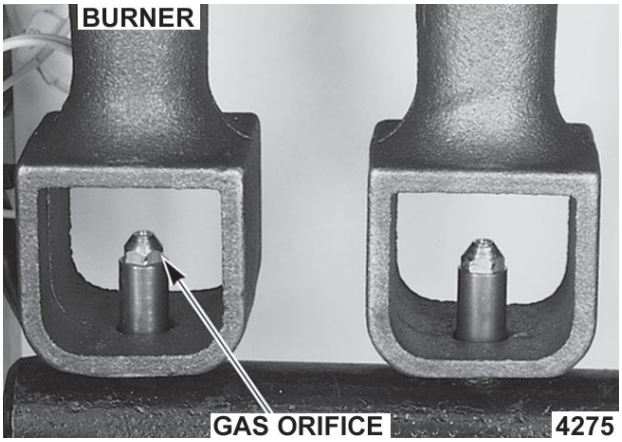
GAS ORIFICE

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

WARNING: SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

1. Remove gas orifice spud from orifice extension.

NOTE: The spud screws into orifice extension. When installing, do not over tighten the spud or damage to the threads may occur.



2. Reverse procedure to install.

GAS COMBINATION VALVE

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

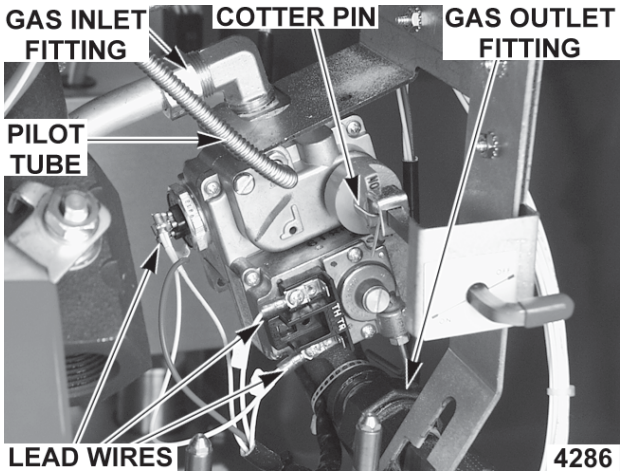
WARNING: SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

WARNING: ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH A SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

NOTE: Gas combination valves are not serviceable and should not be disassembled. Once the problem has been isolated to this control, replace it. Do not attempt to repair the assembly.

1. Remove burners as outlined under “GAS BURNERS”.
2. Disconnect lead wires from gas combination valve.
3. Remove cotter pin securing handle to gas valve on/off knob. Pull handle (with knob bracket attached) away from valve assembly.
4. Disconnect pilot tube compression fitting.
5. Disconnect gas inlet compression fitting.
6. Separate the gas line union at gas outlet on the gas valve, then remove valve.

GAS COMBINATION VALVE FOR ELECTRONIC IGNITION SHOWN



NOTE: Remove fittings on gas valve and install (in same orientation) on the replacement valve.

7. Reverse procedure to install and check for proper operation.

GAS PILOT

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

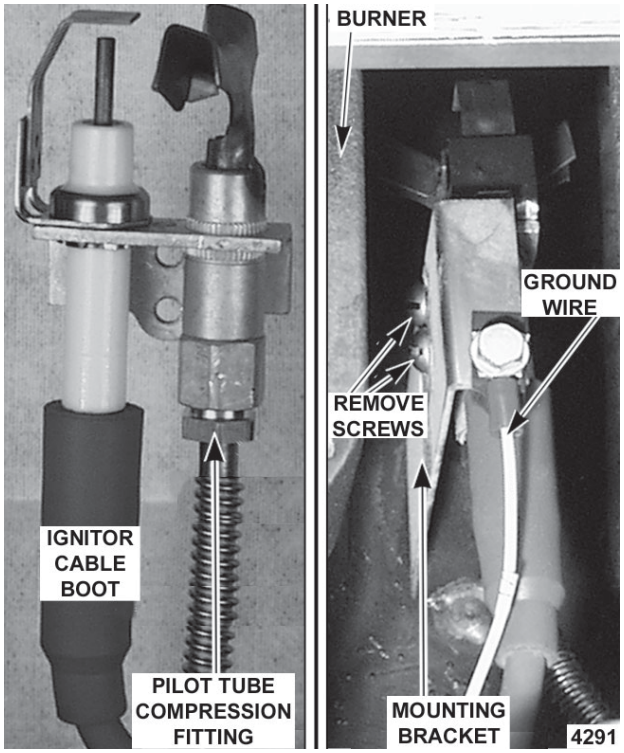
WARNING: SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

WARNING: ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH A SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

1. Remove burners as outlined under “GAS BURNERS”.
2. Disconnect ignitor cable (at boot) from ignitor/flame sense electrode on the gas pilot.
3. Disconnect ground wire from pilot bracket.
4. Disconnect pilot tube compression fitting.

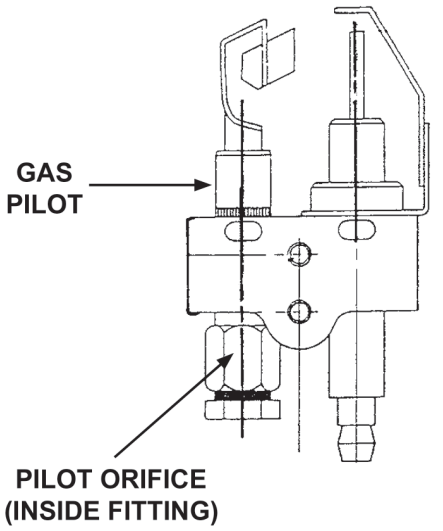
5. Remove screws securing gas pilot to mounting bracket and remove pilot.

GAS PILOT FOR ELECTRONIC IGNITION SHOWN



A. To remove gas orifice from pilot for inspection or cleaning, disconnect the gas orifice fitting from pilot body.

CAUTION: If orifice is clogged with debris, clean with air or liquid only.



6. Reverse procedure to install and check for proper operation.

TEMPERATURE PROBE

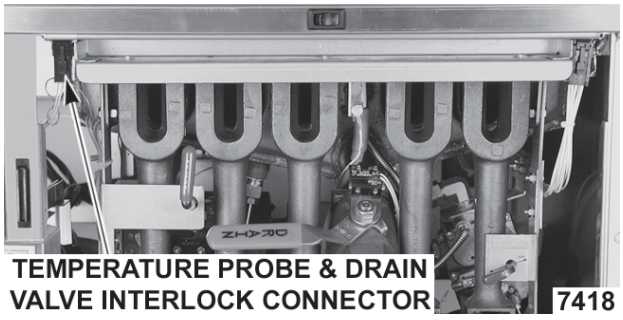
WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

WARNING: SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

CAUTION: Do not sharply bend and kink the temperature probe or damage may occur.

1. Drain frying oil from fryer tank.
2. Disconnect temperature probe & drain valve interlock (DVI) connector.

3GRD85F RIGHT SIDE FRYER SECTION SHOWN

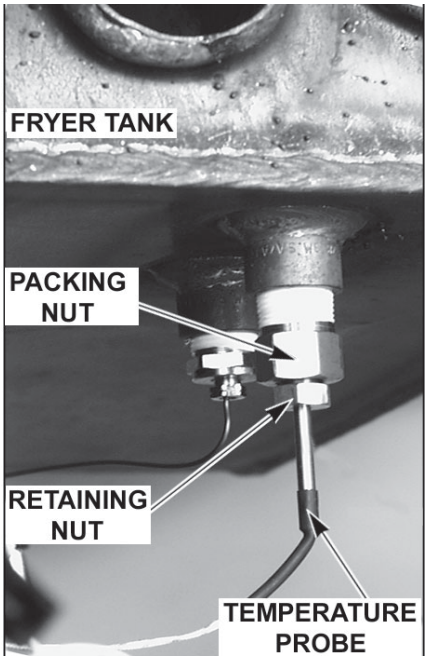


NOTE: The connector has 6 pin positions and is labeled "G" on the wiring diagram.

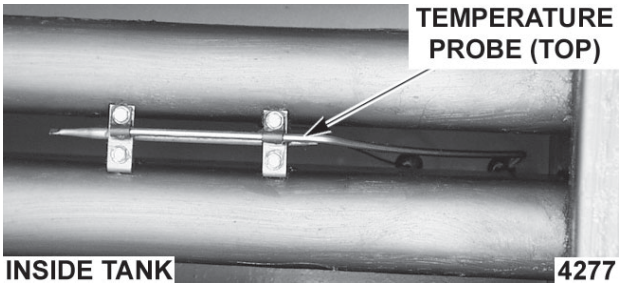
3. Remove the temperature probe lead wires from the 6 pin female connector.

Pin No.	Description
G-1	Probe High (red)
G-2	Empty
G-3	Probe Low (white)
G-4	Empty
G-5	DVI Switch (24VAC) N.O. IN
G-6	DVI Switch (24VAC) OUT

4. Remove the burners as outlined under "GAS BURNERS", to access the probe retaining and packing nuts, at the bottom of fry tank.
5. Remove the probe retaining and packing nuts.



6. Remove screws securing probe mounting clips and probe to the fryer heat tube (inside tank) then remove probe.



7. Reverse procedure to install.
8. Check cooking controls calibration as outlined in "COOKING CONTROL CALIBRATION" under "SERVICE PROCEDURES AND ADJUSTMENTS".

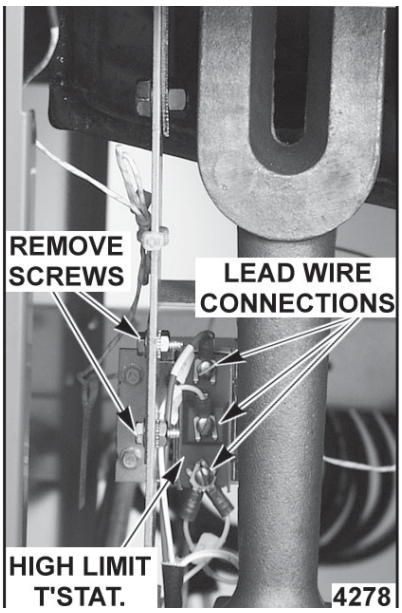
HIGH LIMIT THERMOSTAT

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

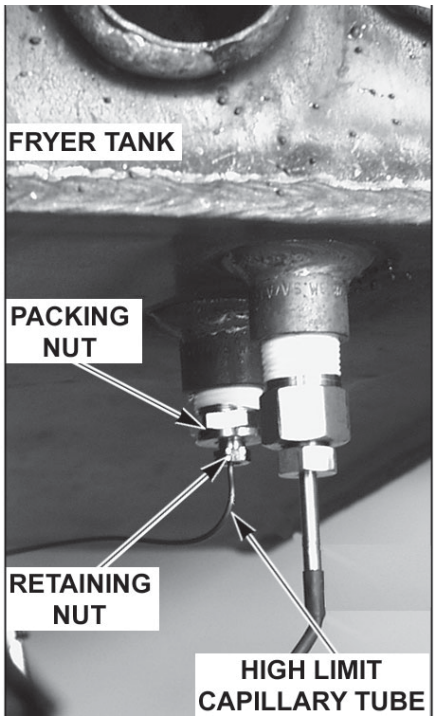
WARNING: SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

CAUTION: Do not sharply bend and kink the temperature probe or damage may occur.

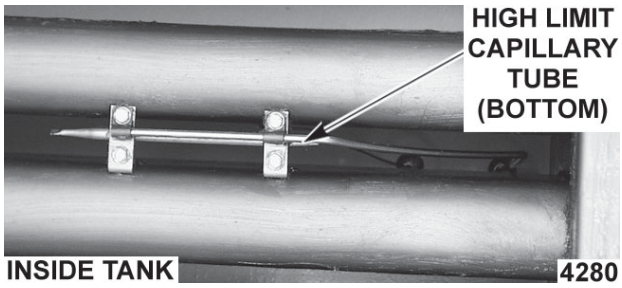
1. Drain frying oil from fryer tank.
2. Remove burners as outlined under "GAS BURNERS".
3. Disconnect lead wires from high limit thermostat.
4. Remove screws securing the high limit to mounting bracket.



5. Remove the capillary tube retaining and packing nuts, from the bottom of fry tank.



6. Remove screws securing mounting clips and capillary tube to the fryer heat tube (inside tank) then remove capillary tube.



7. Reverse procedure to install.

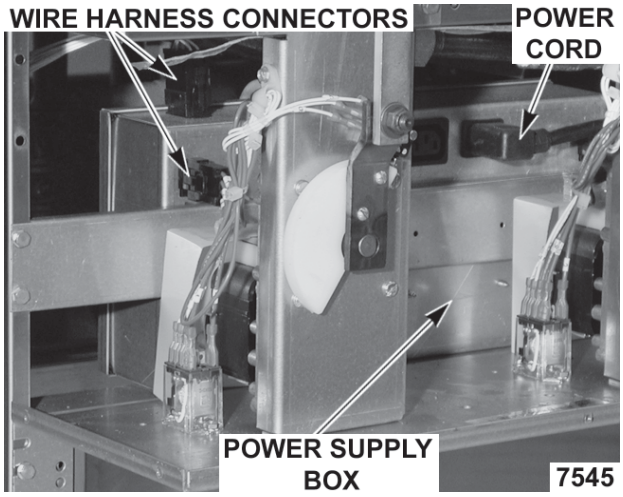
POWER SUPPLY BOX

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

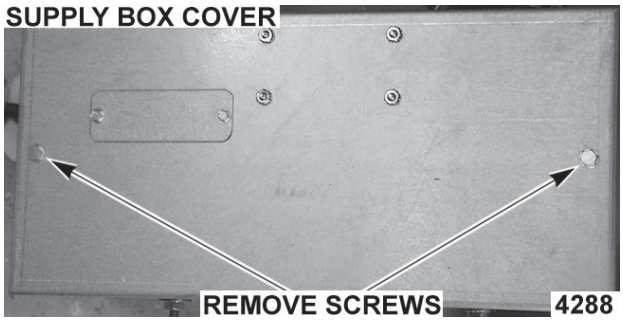
WARNING: SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

WARNING: ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH A SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

1. Disconnect the gas line at rear of the fryer.
2. Move fryer out from wall to access rear of fryer.
3. Open the door to the fryer section being serviced.
4. Disconnect ignitor cable (at boot) from ignitor/flame sense electrode on the gas pilot.
5. Disconnect ground wire from pilot bracket.
6. From rear of fryer:
   A. Disconnect wire harness connectors and power from the power supply box.
   B. Remove mounting bolts securing power supply box to fryer. Access the bolts from the bottom of rear support channel frame.



7. Bring power supply box out from bottom of fryer.
8. To access components in power supply box, remove screws securing cover and lift from box.



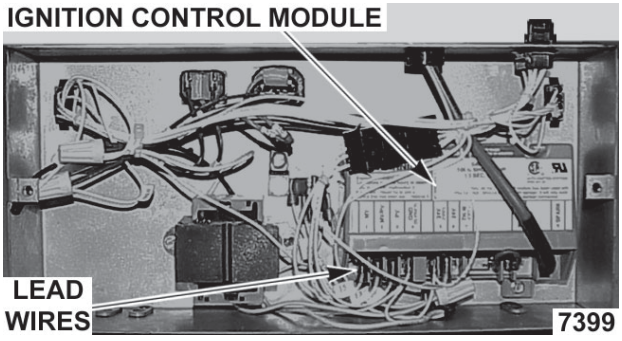
9. Reverse procedure to install.

IGNITION CONTROL MODULE

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

WARNING: SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

1. Remove power supply box as outlined under “POWER SUPPLY BOX”.
2. Access the ignition control module and remove all lead wires and the ignitor cable from module. Take note of individual wire positions.
3. Remove screws securing ignition module and lift out of power supply box.

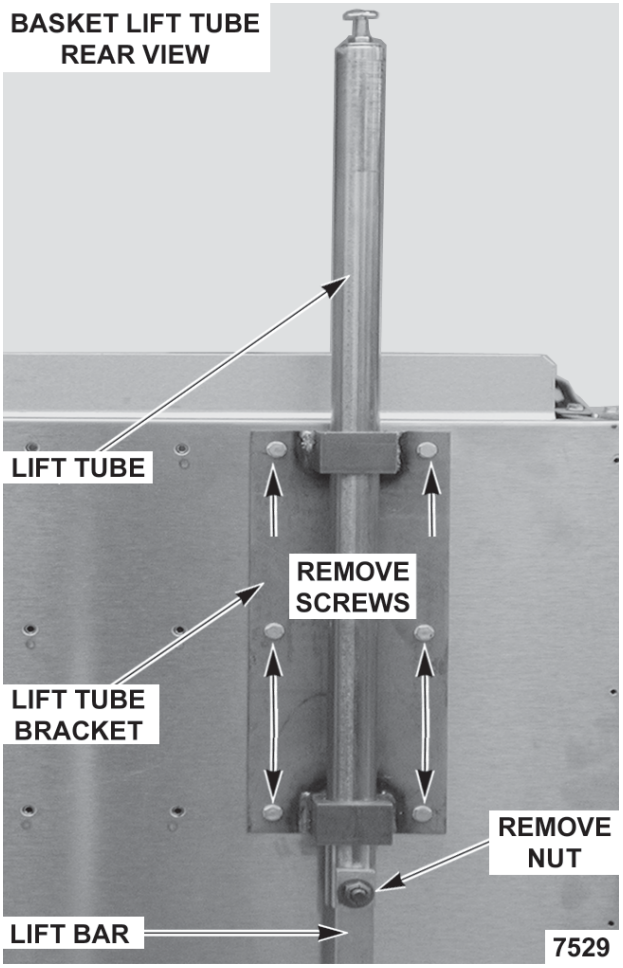


4. Reverse procedure to install and check for proper operation.

BASKET LIFT TUBE

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

1. Remove basket lift cover as outlined in “BASKET LIFT COVERS” under “COVERS AND PANELS”.
2. Remove nut securing lift bar to the lift tube.
3. Remove screws securing lift tube bracket to fryer then remove bracket and lift tube.

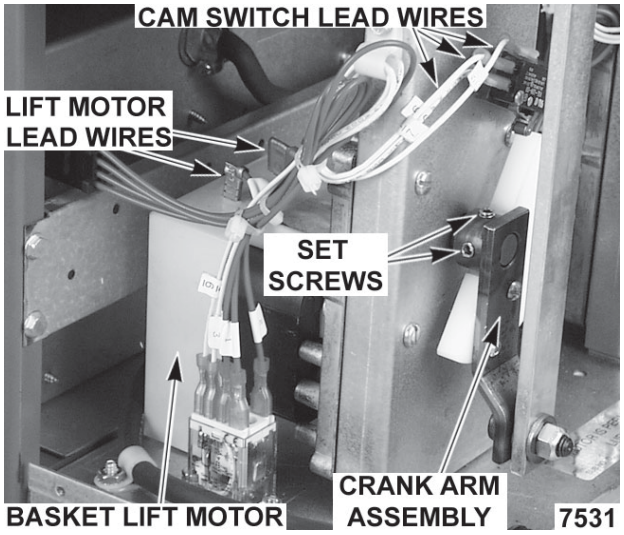


4. Reverse procedure to install.

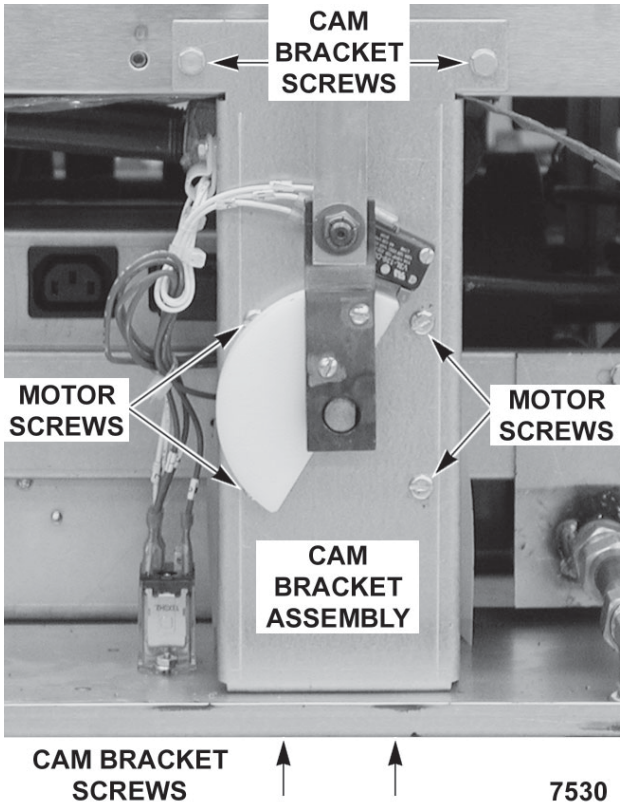
BASKET LIFT MOTOR

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

1. Remove basket lift cover as outlined in “BASKET LIFT COVERS” under “COVERS AND PANELS”.
2. Remove basket lift tube as outlined under “BASKET LIFT TUBE”.
3. Disconnect lead wires from cam switch and basket lift motor.
4. Loosen set screws securing crank arm assembly to the basket lift motor shaft.



5. Remove screws securing basket lift motor to cam bracket, then remove motor from bracket.



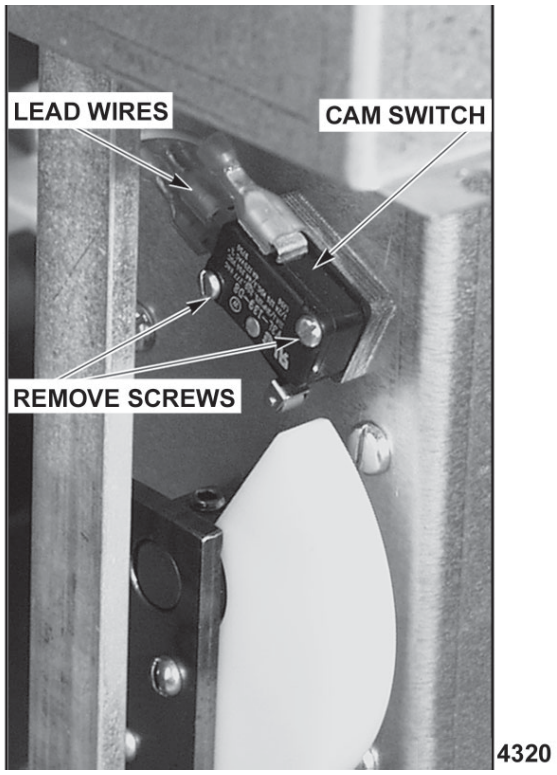
6. Reverse procedure to install and check for proper operation.

NOTE: After reinstalling motor keep all wire leads clear from moving parts.

BASKET LIFT CAM SWITCH

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

1. Remove basket lift cover as outlined in “BASKET LIFT COVERS” under “COVERS AND PANELS”.
2. Remove basket lift tube as outlined under “BASKET LIFT TUBE”.
3. Disconnect lead wires from cam switch.
4. Remove screws securing cam switch to cam bracket.

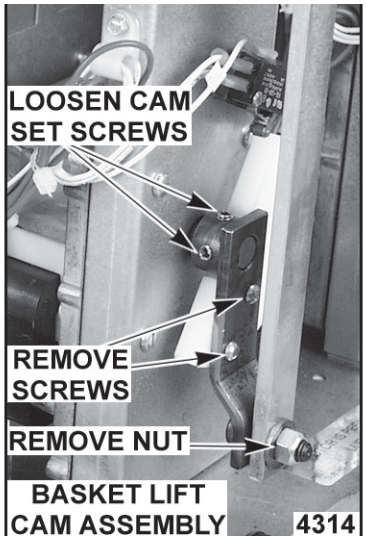


5. Reverse procedure to install.

BASKET LIFT CAM

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

1. Remove basket lift cover as outlined in “BASKET LIFT COVERS” under “COVERS AND PANELS”.
2. Remove nut securing lift bar to cam assembly.
3. Loosen cam set screw.
4. Remove screws securing cam to the crank arm assembly.



5. Reverse procedure to install.

PUMP AND MOTOR

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

1. Open both fryer cabinet doors above the filter tank drawer.
2. Pull the filter drawer out, remove the filter tank assembly and push the tank support arms back underneath the fryer.

NOTE: The remaining steps are written for front removal of the pump assembly. If access to the back of the fryer is available, it may be easier to remove the pump from the rear.

3. Remove burners from the right side fryer section above filter tank drawer as outlined under “GAS BURNERS”.
4. Disconnect the electrical connection to the motor.
5. Separate the swivel hose connections at the pump.

NOTE: When viewed from pump end, the right side is the intake port and the left side is the discharge port.

6. Remove motor mounting bolts.
7. Remove the motor and pump (pipe fittings attached) from the fryer.

   A. If replacing the pump and motor, remove the existing pipe assemblies and reuse.

8. Reverse procedure to install.

NOTE: Ensure the rubber vibration pad or the grommets are installed under the motor mounting plate.

FRY TANK ASSEMBLY

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

WARNING: SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

WARNING: ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH A SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

1. Drain frying oil from fryer tank.
2. Disconnect the gas supply line to allow access to fryer from all sides.
3. Remove fryer baskets, crumb screen and basket hanger.

NOTE: If the fryer is equipped with automatic basket lifts, remove “lift arms” from the support rods before fry tank removal.

NOTE: If the fryer is a battery section, remove grease strip and split the silicone seal between the fryer section tanks with a utility knife.

4. Remove the control panel as outlined in “CONTROL PANEL” under “COVERS AND PANELS”.

5. On battery fryer sections only, remove bolts securing the drain pipe flange to the manual drain valve.
6. Disconnect temperature probe and drain valve interlock switch (DVI) connector (6 pin) on the left.
7. Disconnect the following lead wire connectors: main control harness (right); gas combination valve and power supply box.
8. Disconnect ignitor cable and ground wire from gas pilot assembly.
9. Remove gas manifold and frame assembly.
    A. For the fryer sections above the filter drawer assembly on battery fryers or single floor model fryers, remove mounting nuts securing gas manifold and frame assembly to the fryer's base frame.
    B. For all other fryer sections in a battery only, remove mounting nuts securing gas manifold and frame assembly to the V shaped frame support bracket.
10. Separate the oil return line (hose or flexible tubing) fitting at the elbow.
11. Separate gas line compression fitting at the top of the gas combination valve (inlet).
12. Remove bolts securing gas line support bracket on the left side of gas manifold and frame assembly. Allow gas line support bracket to swing out of way then replace bolts in the frame. Hand tighten only.
13. Remove screws securing the top of fry tank to the flue wrap.
14. Grasp the fry tank at the top (by flue) and front lip, then lift fry tank assembly from the fryer body. Place the assembly on floor or table for removal of components.
15. Remove gas pilot assembly as outlined under "GAS PILOT".
16. Remove temperature probe as outlined under "TEMPERATURE PROBE".
17. Remove high limit thermostat as outlined under "HIGH LIMIT THERMOSTAT".
18. Remove filter valve assembly and oil return line piping from fryer. If removing left side fryer tank above filter drawer assembly, disconnect oil line and remove discard valve assembly from fryer.
19. Remove bolts securing gas manifold and frame assembly to the fry tank.
20. Pull the gas manifold assembly from fry tank.
21. Disconnect drain valve interlock switch (DVI) connector (2 pin) and remove manual drain valve.
22. Remove screws securing flue box to fry tank then remove flue box.
23. Reverse procedure to install all the parts removed from original fry tank onto replacement fry tank, then install the assembly.

SERVICE PROCEDURES AND ADJUSTMENTS

WARNING: CERTAIN PROCEDURES IN THIS SECTION REQUIRE ELECTRICAL TEST OR MEASUREMENTS WHILE POWER IS APPLIED TO THE MACHINE. EXERCISE EXTREME CAUTION AT ALL TIMES. IF TEST POINTS ARE NOT EASILY ACCESSIBLE, DISCONNECT POWER, ATTACH TEST EQUIPMENT AND REAPPLY POWER TO TEST.

TEMPERATURE PROBE TEST

The temperature probe is used for both the solid state control and the computer control. The probe is an RTD (resistance temperature detector) of the thermistor type. As temperature increases the resistance value decreases.

Probe Fault

If a temperature probe fault or high temperature condition occurs, a fault message will be displayed and the electronic alarm will sound continuously. The heat demand and basket lift outputs are deactivated. If a cooking cycle is in process (timer active), it will be cancelled and the key pad disabled.

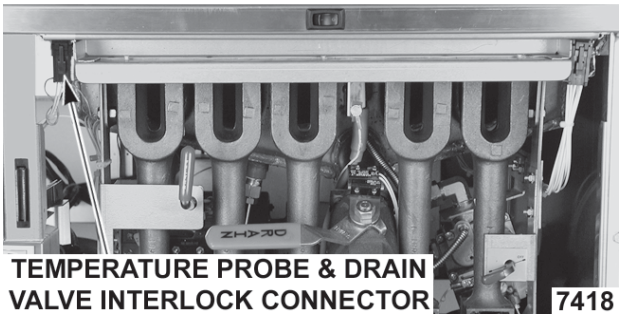
This will continue until the fault clears, power is cycled or problem resolved.

Control Type	Display Message
SOLID STATE	An open will display “Prob” and a short or high temperature condition will display “HI”.
COMPUTER	An open will display “PROBE OPEN” and a short or high temperature condition will display “PROBE SHORT”.

To Check:

1. Disconnect the temperature probe & the drain valve interlock (DVI) connector.

3GRD85F RIGHT SIDE
FRYER SECTION SHOWN



TEMPERATURE PROBE & DRAIN VALVE INTERLOCK CONNECTOR 7418

NOTE: The connector has 6 pin positions and is labeled “G” on the wiring diagram.

2. Test the probe using a VOM to measure resistance. Place the meter probe leads in pins 1 & 3.

   A. If the measured resistance values are within the allowable range, the probe is functioning properly. Reverse procedure to re-install.

   B. If the measured resistance values are outside the allowable range, install a replacement probe and check for proper operation.

Temperature (°F)	Resistance (Ω)
77	90,000 - 110,000
350	604 - 836
415[1]	302 - 369
460[2]	191 - 233

NOTE: 1. High temperature alarm level for the cooking controls.
2. Shorted probe equivalent temperature.

COOKING CONTROL CALIBRATION

1. Check the level of frying oil in tank. The level must be between the MIN & MAX fill lines before proceeding.
2. Allow the oil to cool below 300°F.
3. Place a thermocouple in the geometric center of the fry tank one inch below the oil surface.
4. Set the cooking control to 350°F and turn the fryer on.
5. Allow the frying oil temperature to stabilize (normally 3 cycles).

NOTE: Agitate the frying oil, to eliminate any cold zones.

6. Record the temperature reading from the meter, at which the gas burners turn off and turn on for at least two complete heating cycles.
7. Calculate the average temperature by adding the temperature reading when the gas burners turn off to the temperature reading when the gas burners turn on and divide this answer by 2.

[Temp. (burners off) + Temp. (burners on)] ÷ 2 = Average Temp.

Example: 360° + 340° ÷ 2 = 350°F.

The average temperature should be 350°F (± 5°F).

A. If the average temperature reading is within tolerance, cooking control is properly calibrated.

B. If the average temperature reading is out of tolerance, perform the following:

1) Solid State Control - Adjust the offset temperature accordingly as outlined in “SOLID STATE CONTROL” under “SERVICE PROCEDURES” and “ADJUSTMENTS”.

2) Computer Control - Adjust the offset temperature accordingly as outlined in “COMPUTER CONTROL” under “SERVICE PROCEDURES” and “ADJUSTMENTS”.

C. Allow the fryer to cycle twice and calculate the average temperature.

8. If the above adjustment can not be obtained, check the temperature probe as outlined under “TEMPERATURE PROBE TEST”.

ELECTRONIC IGNITION SYSTEM

Operation

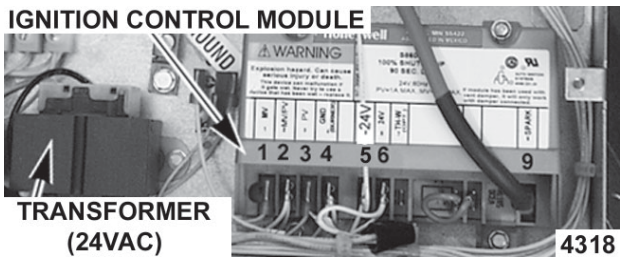
When the main power switch is turned on the ignition control module is energized with 24 volts between terminals 5 and 6.

An output of 24 volts is sent from terminals 2 and 3 to the pilot coil on the combination valve, allowing gas flow to the pilot; and spark voltage is sent from terminal 9 to begin sparking at the ignitor/flame sense electrode. The sparking will continue until an adequate pilot flame is sensed or for a maximum of 90 seconds.

If pilot ignition is not established within the first several seconds of ignition trial time, the cooking control displays a message indicating “pilot out” or “ignition failure” as the ignition module continues to generate a spark at the ignitor/flame sense electrode.

If pilot is not established within the 90 second ignition trial time, the ignition module locks out power to the gas valve. A message is displayed by the control indicating “ignition lockout”; keypad is disabled and the electronic alarm will sound continuously.

The system remains locked out until the power switch is cycled to reset the system and re-start the ignition trial cycle.

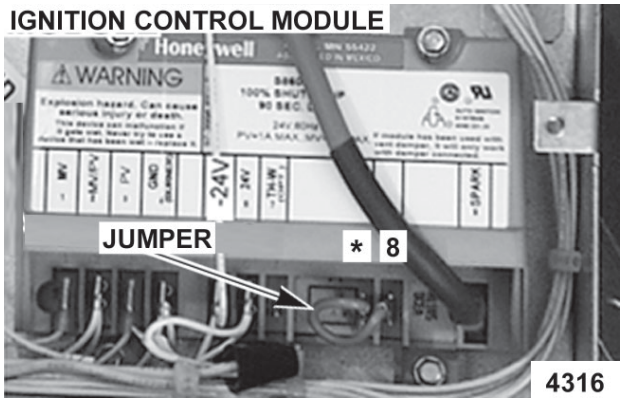


Once the pilot flame is confirmed, a 24 volt output from terminal 1 will provide the ignition status input signal to the cooking control. When the cooking control calls for heat, the heat output is activated and power is applied to the heat control Triac on the Control Interface Board. With the Triac powered, the main valve coil on the combination valve is then energized, allowing gas flow to the burners.

Terminal	Description
1	MV (main voltage) - 24VAC output will be present, providing the ignitor/flame sense electrode is sensing an adequate pilot fame.
2	MV/PV (common).
3	PV (pilot voltage) - 24VAC output will be present after the ignition module is powered. The voltage will remain present, providing an adequate pilot flame is sensed. If the pilot flame is not sensed within the ignition trial time, the ignition module locks out which removes the output voltage.
4	Burner ground.
5	24VAC ground.
6	24VAC hot (input).
9	Spark voltage output to ignitor/ flame sense electrode; and for pilot flame current “rectification”.

FLAME SENSE CURRENT CHECK

1. Turn the power switch off.
2. Access the ignition control module in the power supply box.
3. Remove the jumper wire between terminals marked with an asterisk (*) & 8.



4. Set VOM to micro amp scale (DC) and connect meter leads at the same terminals. Negative (-) meter lead to the asterisk (*) terminal and positive meter lead to terminal 8.
5. Turn power switch on and set cooking control to call for heat.
6. Meter reading should be above 1.0 micro amp (minimum) and steady.
   A. If reading is greater than or equal to the value stated in step 6, then flame sense current is within tolerance.
      1) Turn power switch off and replace jumper wire.
   B. If reading is less than the value stated in step 6, turn power switch off and replace jumper wire.
      1) Perform “ELECTRONIC IGNITION CONTROL TEST”.

ELECTRONIC IGNITION CONTROL TEST

If the ignition control module is not generating a spark to ignite gas pilot, perform the following checks.

1. Turn the power switch on and verify the ignition control module is receiving power from the transformer.
   A. If 24VAC is present between terminals 5 & 6 on the ignition control module, then module is receiving power. Turn the power switch off and proceed to step 2.
   B. If 24 VAC is not present then find the source of the problem.

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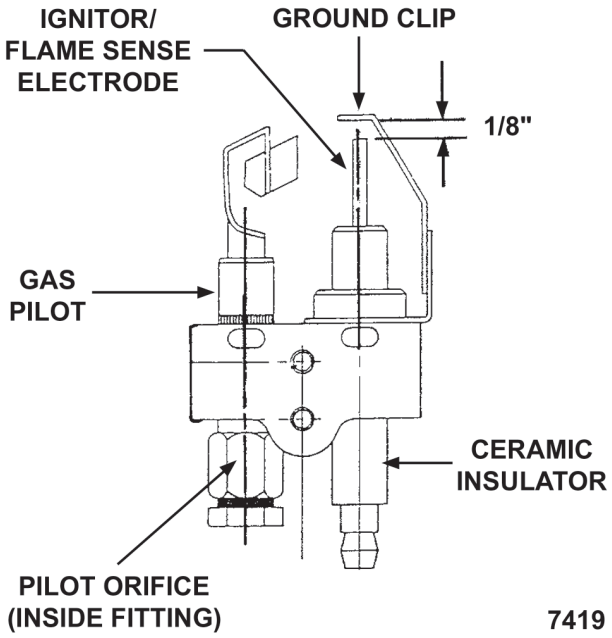
WARNING: SHUT OFF THE GAS SUPPLY BEFORE SERVICING THE UNIT.

WARNING: ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH A SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

2. Verify all electrical connections on the ignition control module are secure.
3. Verify the ground wire connections on the ignition control module and the gas pilot mounting bracket are clean and secure. The gas pilot should have good metal to metal contact to the pilot mounting bracket on the fryer.
4. Remove the gas pilot and check the following:
   A. Inspect the ceramic insulator on the ignitor/flame sense electrode for cracks or evidence of exposure to extreme heat, which can permit leakage to ground. If either of these conditions exist, then install a replacement gas pilot.
   B. Inspect the ignitor electrode and ground clip for contaminates, or corrosion. Clean those surfaces as necessary.
   C. The gap between the ignitor/flame sense electrode and the ground clip should be 1/8 inch. If the gap is outside of this dimension, bend the ground clip as necessary, to make the adjustment.

ELECTRONIC IGNITION GAS PILOT SHOWN



   D. Check the ignitor cable connection for tightness and damaged insulation. If the ignitor cable appears to be damaged, then install a replacement ignitor cable.
5. With gas pilot installed and the ignitor cable connected, reconnect power and turn the gas supply on.
6. Turn power switch on and observe spark from ignitor.
   A. If spark from ignitor is present and ignites the gas for the pilot, and burners light, then the system is working properly.

B. If gas pilot lights but does not maintain an adequate flame during the trial for ignition (90 sec.), check pilot orifice for clogging.

CAUTION: If orifice is clogged with debris, clean with air or liquid only.

C. If spark from ignitor is present but does not ignite pilot gas before the ignition control module locks out, there may not be enough gas in the line for ignition.

Turn the power switch off to re-set the module. Wait 5 minutes between ignition tries for unburned gas to vent. Turn the power switch on and sparking should resume to ignite pilot. The module may need re-set several times before ignition takes place.

D. If ignitor is still not sparking, turn the power switch off, disconnect power and turn the gas supply off.

7. Install a replacement ignition control module and check for proper operation.

GAS MANIFOLD PRESSURE ADJUSTMENT

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES. THERE MAY BE MULTIPLE CIRCUITS. BE SURE ALL CIRCUITS ARE DISCONNECTED.

WARNING: SHUT OFF THE GAS SUPPLY BEFORE SERVICING THE UNIT.

1. Open the doors and turn the gas combination valve off.
2. To measure the manifold pressure, remove the 1/8 inch NPT plug (pressure tap) on the outlet side of the valve and attach a manometer.

NOTE: Gas manifold pressure can also be measured at the pressure tap in the manifold. However, the fryer drain pipe may need removed for access.

3. Turn the gas supply, gas combination valve and the main power switch to on.

   A. Verify burners light.

4. Observe the manometer pressure reading and compare to the pressure chart near the end of this procedure.

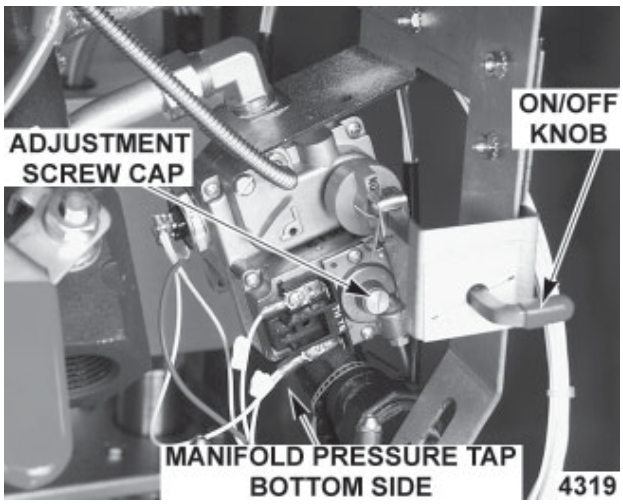
   A. If other appliances are connected to the same gas line, turn them all on and check manometer pressure reading again. If a pressure drop of 1/2 inch water column or more is observed, then the gas supply needs to be checked by the gas line installer or the local gas company for adequate sizing.

   B. If adjustment is necessary, proceed to step 5.

5. Remove the adjustment screw cap to access the pressure adjustment screw.

   A. To increase pressure, turn the screw clockwise. To decrease pressure, turn the screw counterclockwise.

GAS COMBINATION VALVE FOR ELECTRONIC IGNITION SHOWN



NOTE: Accurate gas pressure adjustments can only be made with the gas on and the burner lit.

6. Set the pressure as outlined below:

PRESSURE READINGS (INCHES W.C.)

GAS TYPE	MANIFOLD	LINE		
		RECOMMENDED	MIN	MAX
Natural	4	7	5	14
Propane	10	11	11	

NOTE: If the incoming line pressure is less than the minimum stated, then the manifold pressure can not be set correctly.

7. Once the correct pressure has been set, turn the power switch off, replace the adjustment screw cap and 1/8 inch NPT plug (pressure tap) on the outlet side of the valve.
8. Check for proper operation.

BASKET LIFT ARM ADJUSTMENT

1. With frying oil at room temperature, verify the oil level is between MIN & MAX lines in fry tank. Add frying oil as needed.

NOTE: Frying oil will expand when heated. Do not fill the fry tank past the MAX line.

2. Turn power switch on and set temperature to 350°F. Allow the frying oil to reach set temperature.
3. Check basket lift operation.

   A. If necessary, adjust as outlined below.

4. When basket is in the up position, the bottom of the basket should be out of the oil. When basket is in the down position, the bottom of the basket should clear the crumb screen and the product should be submerged.

   A. To adjust, remove basket arm from lift shaft, loosen stop nut and turn height adjustment bolt to raise or lower basket arm as required. Both baskets should be same height.

   B. Re-tighten stop nut when complete.

NOTE: If adjustment is to low, when the basket is lowered, it will disengage from basket arm.

SOLID STATE CONTROL

Operation

Refer to the Installation & Operations manual for specific operating instructions.

Error messages

For information on solid state control error messages, refer to “SOLID STATE CONTROL” under “TROUBLESHOOTING”.

Programming

The solid state control’s “programming” mode is used to set the controls operational parameters.

NOTE: If a product key is active (timing), programming mode can not be entered.

1. Press “V” key to enter programming mode. If the PARAMETER LOCK feature is disabled, PROGRAM MODE entry is immediate. If the PARAMETER LOCK feature is enabled “LoC” will be displayed.

   Use the following key sequence (password) to enter PROGRAM MODE: LEFT BASKET/UP; LEFT BASKET/UP; RIGHT BASKET/DOWN; RIGHT BASKET/DOWN.

   NOTE: If the proper key sequence is not entered within 6 seconds the controller exits PROGRAM MODE.

2. Beeper chirp’s on each successful keypress; If a key is not pressed within 2 minutes, the control will automatically exit programming.
3. To scroll through each of the PROGRAM ITEMS, press “V” and release.
4. To exit PROGRAM MODE, at any time, press “V” and hold for 1 second.

PROGRAM ITEM	KEY SEQUENCE	DISPLAY [5]
Left Timer	• Press "Left Basket" to increase or "Right Basket" to decrease cook time. [1]	LED above left basket is on. "15:00" time value with flashing colon (MM:SS).
Right Timer	• Press "Left Basket" to increase or "Right Basket" to decrease cook time. [1]	LED above right basket is on. "15:00" time value with flashing colon (MM:SS).
Setpoint Temperature	• Press "Left Basket" to increase or "Right Basket" to decrease "setpoint" temperature. [2]	"340F" OR "171C" current set point with flashing F or C
Calibration Offset	• Press "Left Basket" to increase or "Right Basket" to decrease "offset" temperature. [2, 3]	"00F" OR "-00F" always in F
Melt Options	• Press "Left Basket" or "Right Basket" to scroll thru "Melt Options"	"CY 0" "CY L" = Liquid "CY S" = Solid "CY 0" = No
Energy Source	• Press “Left Basket” or “Right Basket” to select energy source	“gAS” or “ELEC”
Parameter Lock	• Press "Left Basket" or "Right Basket" to select desired "Lock Condition" [4]	"LoC" parameter lock enabled or flashing "Uloc" parameter lock disabled
Degrees F or C	• Press "Left Basket" or "Right Basket" to select desired "Temperature Scale"	"F or C"
NOTES:	1. Time will change in one second increments, accelerating if the button is held. 2. Temperature will change in one degree increments, accelerating if the button is held. 3. Range -20 to +20, default = 0 (F). 4. Selecting Parameter Lock "enabled" will take effect on the next Program Mode entry. 5. Default values are shown.	

COMPUTER CONTROL

Operation

Refer to the Installation & Operations manual for specific operating instructions.

Service Programming

The computer control's "service programming" mode is used to perform system diagnostic tests or edit "program items" that affect the fryers operation.

NOTE: If a product key is active (timing), service programming can not be entered.

Error messages

For information on computer control error messages, refer to "COMPUTER CONTROL" under "TROUBLESHOOTING".

Enter Service Mode

1. Press "V" key and enter password (default, 1972); Use product key numbers (1-9, & 0) to enter values.
   A. SERVICE is displayed in left window & the LED's above product key's 1, 2, 4, 5, 6, 7 & 8 come on.
   B. Beeper chirp's on each successful keypress; If a key is not pressed within 2 minutes, the computer will automatically exit service programming (except in diagnostic or more service programming).
2. To exit a PROGRAM ITEM after making a selection, press "V" to accept and return to service programming.
3. To exit SERVICE PROGRAMMING and return to operation mode, press "V" key twice.

PROGRAM ITEM	KEY SEQUENCE	LED STATUS		DISPLAY [5]	
		ON	OFF	LEFT	RIGHT
Temperature Offset	• Press "1" and enter desired offset temperature		all	OFF 00 F	DEGREES
	• Press "V" to accept selection				
	• Press "TOGGLE" to display direction of offset (positive or negative)			POSITIVE OR NEGATIVE	DEGREES
Melt Cycle On/Off Times	• Press "2" and set melt cycle on time		all	MLTON:08	MELT ON
	• Press LEFT OR RIGHT "TIMER" key arrow and set melt off time			MLTOFF:26	MELT OFF
Diagnostic Mode	• Press "5" to enter diagnostic mode (outputs for heat, basket lifts and cooking timers turned off)	5, 7		DIAGNOST	DIAGNOST
	• Press "1" to toggle left basket lift output; left basket lift lowers. LED toggles on/off.	5, 7		L BASKET	L BASKET
	• Press "2" to toggle right basket lift output; right basket lift lowers. LED toggles on/off.	5, 7		R BASKET	R BASKET
	• Press "3" and hold to temporarily activate heat demand (heat on); release to de-activate heat demand (heat off). LED toggles on/off. [1]	5, 7		HEAT DEM	HEAT DEM
	• Press "5" to test drain valve interlock	5, 7			
	- If drain valve closed	5, 7		DRN ON	DRN ON
	- If drain valve open	7	5	DRN OFF	DRN OFF
	• Press "6" and hold to light all display elements	all		*.*.*.*.*.*'*'*	*.*.*.*.*.*'*'*
	• Press "7" to test ignition status input [2]	5, 7			
	- If gas valve on	5, 7		PILOT ON	PILOT ON
	- If gas valve off or ignition module lock out	5	7	PILOT OF	PILOT OF

Service Programming, continued on next page

PROGRAM ITEM	KEY SEQUENCE	LED STATUS		DISPLAY [5]	
		ON	OFF	LEFT	RIGHT
Temperature Ready Level	• Press "6" to view the cooking cycle lock out temperature (always F). To edit, enter the 2-digit number desired. [3]		all	READY40F	
More Service Programming Level	• Press "8" to enter the More Service Programming. To edit one of the selections, enter the 2-digit number desired. To exit a selection, press "V" to accept & return to More Service Programming.	4, 5, 6		MORE	SERVICE
	• Press "4" to view or edit the Shake Alarm duration: 0-98 seconds; 99 - continuous alarm until cancelled manually.			DT-DUR13	DURATION
	• Press "5" to view or edit the Hold Alarm duration: 0-98 seconds; 99 - continuous alarm until cancelled manually.			HD-DUR.˙05	DURATION
	• Press "6" to view or edit the Cooking cycle cancel delay; 0-10 seconds.[4]			CANCEL.˙01	DELAY
	• Press “7" to set number of lifts:			LIFTS	(SEE NOTE 6)
	• Press “8" to set energy source: gas or electric.			FRYER	(SEE NOTE 7)
NOTES:	1. Oil temp LED’s cycle on/off with heat. 2. If gas valve is turned to on, PILOT ON is displayed to indicate gas valve position is on & computer is receiving input status signal from valve. If gas valve is turned to off, PILOT OFF is displayed and gas ignition sequence starts. If pilot does not light within ignition trial time, PILOT OFF is displayed and ignition module locks out. Service programming can still continue but upon exit, PILOT OUT is displayed. Turn power off to reset. 3. If the cooking temperature is below set point by this number, a cooking cycle can not be started. 4. The number of seconds to hold a product key during a cooking cycle to cancel it. 5. Default values are shown. 6. Using Toggle Key select “0”, “1” or “2”. 7. Using Toggle Key select “GAS” or “ELECTRIC”.				

Display, Led and Keypad Test

1. Press and hold the “5” key while turning power on to Initiate test. Release the “5” key during display of software revision level.
2. For each number key (1-9, & 0) pressed, the corresponding value is displayed in each character position on the left and right display.

   (i.e.”5" key shows “55555555” “55555555”).

NOTE: Beeper chirp’s for as long as key is held.

3. For each function key pressed, the following values are displayed in each character position on the left and right display:

   - PROGRAM (V): “V”
   - TEMPERATURE: “T”
   - TOGGLE: “L”
   - BOIL: “B”
   - LEFT TIME: “<“
   - RIGHT TIME: “>”

4. Turn power off to exit test.

ELECTRICAL OPERATION

COMPONENT FUNCTION

FRYER CONTROLS

Solid State or Computer Cooking Controls ("D" or "C" Models) ..... Monitors and evaluates input signals to the control. Controls the cooking cycle: Activates the heat output signal to maintain frying oil temperature, counts product cook time(s), signals the electronic alarm at the end of a cooking cycle and activates the left and right lift output signal to operate the basket lifts(s).

NOTE: By utilizing the same wiring harness connections, the two control types are interchangeable between fryers.

Control Interface Board ..... Provides the output signal interface from the cooking control, to regulate gas heating and basket lift operation. The board components consist of a heat control Triac and two single pole N.O. relays.

Transformer ..... Supplies 24VAC to the cooking control. If equipped with electronic ignition, also supplies power to ignition control module. Transformer is energized when power switch is turned on.

Power Switch ..... Supplies power to control circuit.

Gas Combination Valve ..... Allows gas flow to the pilot when pilot valve coil is energized; and gas flow to the burners when main valve solenoid is energized. Also, regulates the gas manifold pressure.

High Limit Thermostat ..... Prevents the frying oil from reaching temperatures over 450°F (auto reset @ 415°F). Serves as a backup to the cooking control's high temperature alarm setting of 415°F (normal operation resumes when temperature falls below this point).

Temperature Probe ..... Senses temperature of frying oil. Converts the temperature into a resistance valve which is monitored by the cooking control. The probe is an RTD (resistance temperature detector) of the Thermistor type. As temperature increases the resistance value decreases.

Ignition Control Module ..... Controls and monitors gas pilot ignition. Energizes pilot valve coil on the combination control valve and generates spark for pilot ignition. Monitors the presence of a flame and supplies an ignition status input signal to the cooking control. Electronic ignition models only.

Ignitor/Flame Sense ..... Ignites the gas pilot and senses the presence of a flame. The flame presence generates a micro-amp flame sense current that is rectified to the ignition control module. The spark ignitor/flame sense is a component for the gas pilot with electronic ignition only.

Drain Valve Interlock Switch (D VI) ..... A magnetic reed switch mounted on the manual drain valve that supplies a drain valve position signal (open/closed) to the cooking control. When drain valve is open, the drain interlock input to the control is removed. This prevents the gas burners from coming on with the fry tank empty.

KLEENSCREEN FILTER CONTROLS

Filter Power Switch ..... Supplies 120VAC to pump motor. Filter valve switch or discard valve switch must be closed (valve handle extended).

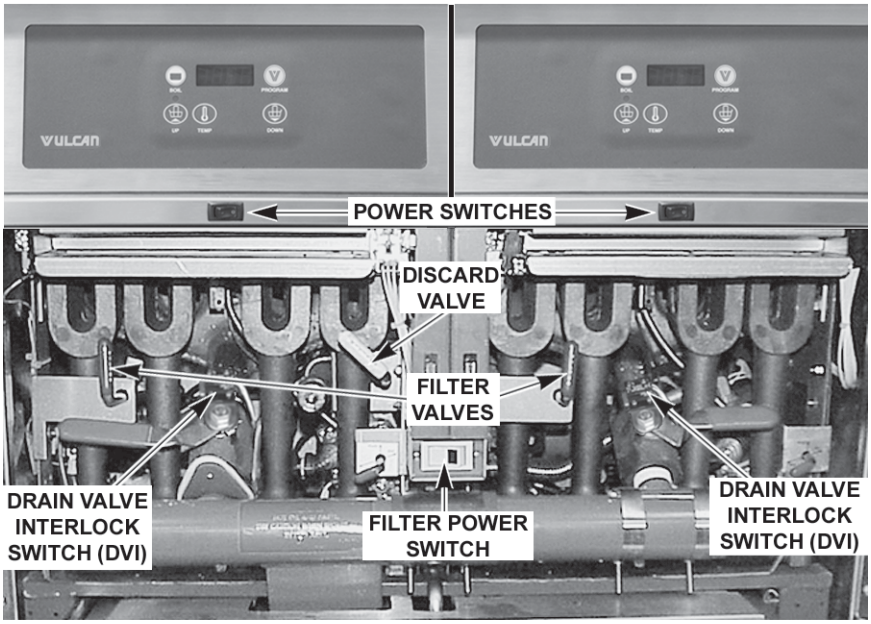
Pump Motor ..... Operates pump to circulate frying oil through filtering system.

Filter Valve Switch ..... Energizes pump motor to filter the frying oil when switch is closed (valve handle extended). Filter power switch must be turned on. When oil filtering is complete, close the manual drain valve to the fryer and allow the fry tank to refill. Return the switch to the N.O. position (valve handle retracted) when all filtered oil is returned to fry tank.

Discard Valve Switch ..... Energizes pump motor to discard the frying oil from filter tank when switch is closed (valve handle extended). Filter power switch must be turned on. Oil is discarded through the discard hose into a separate container. When filter tank is empty, return the switch to the N.O. position (valve handle retracted) when all frying oil is discarded.

COMPONENT LOCATION

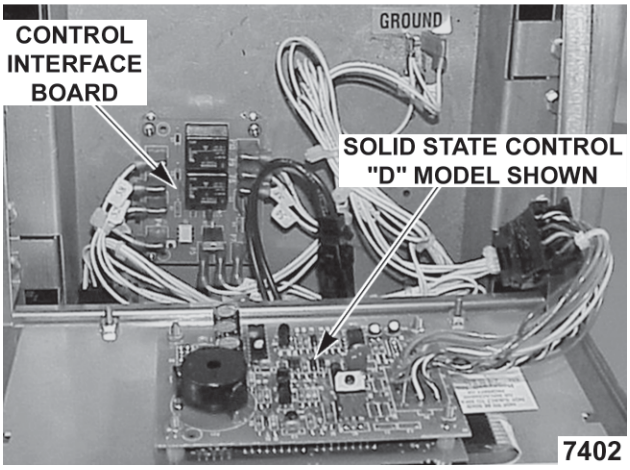
2GRD45F KLEENSCREEN FRYER SHOWN
SOLID STATE CONTROLS ("D" MODEL)



* PUMP MOTOR LOCATION - RIGHT SIDE FRYER SECTION ABOVE FILTER DRAWER.
* POWER SUPPLY BOX LOCATION - LEFT FRYER SECTION AT THE REAR.

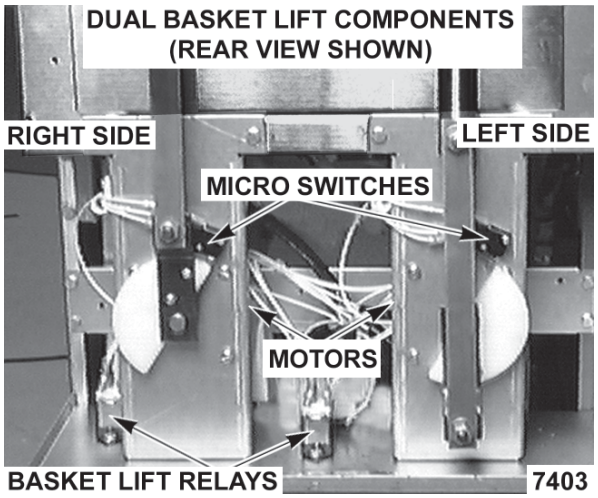
7401

COMPONENT AREA BEHIND CONTROL PANEL



7402

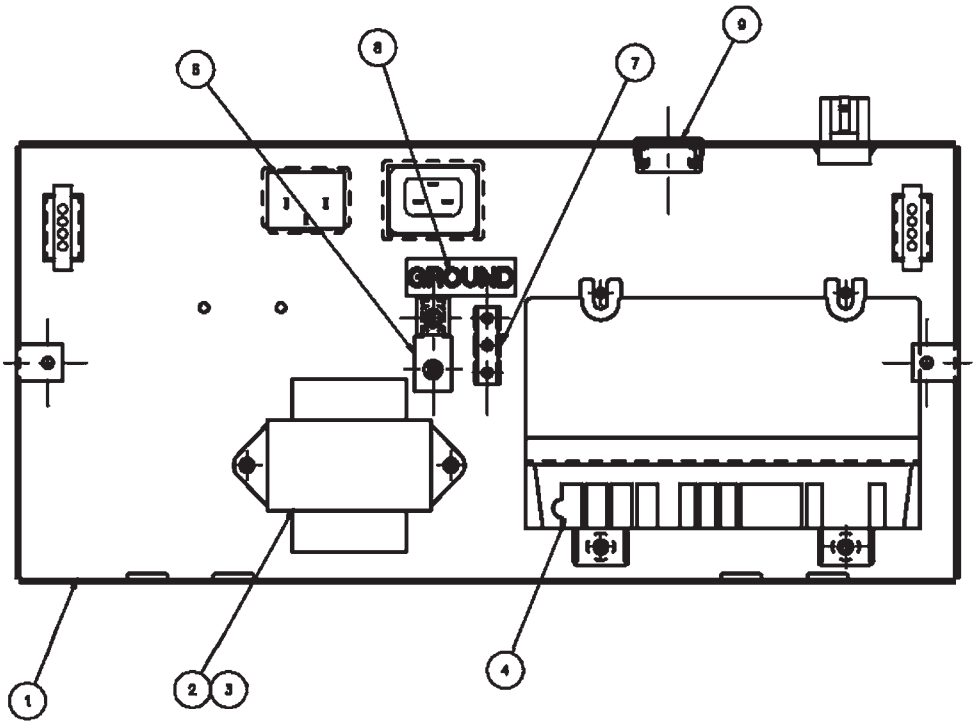
DUAL BASKET LIFT COMPONENTS
(REAR VIEW SHOWN)



7403

POWER SUPPLY BOX

POWER SUPPLY BOX



IT.	DESCRIPTION
9	RESTRAINT, CORD
8	DECAL, GROUND
7	TERMINAL
6	GROUND LUG
4	MODULE, IGNITION
3	TRANSFORMER 240V
2	TRANSFORMER 120V
1	BOX, POWER SUPPLY
G2	**BOX, POWER SUPPLY 240V
G1	*BOX, POWER SUPPLY 120V

*G1 120V WITH ELECTRONIC IGNITION
**G2 240V WITH ELECTRONIC IGNITION

NOTE: POWER SUPPLY BOX FOR ELECTRONIC IGNITION SHOWN. FOR MANUAL IGNITION, THE IGNITION CONTROL MODULE IS REMOVED.

7400

SEQUENCE OF OPERATION

Solid State or Computer, Cooking Control

Refer to schematic diagram 7411 for Cooking Control operation.

FRY CYCLE - LIQUID FRYING OIL

If using solid shortening, the control should be programmed to use the MELT CYCLE. In the MELT CYCLE, the control will "cycle" the heat ON/OFF in short intervals. This will gradually heat and liquefy the shortening until it reaches a temperature of 135°F. Melt cycle default times are:

- Liquid (CY L) = 16 sec on, 18 sec off
- Solid (CY S) = 8 sec on, 26 sec off
- No melt (CY 0) = 100% on.

The control then resumes normal operation as described in this sequence.

1. Conditions.
   A. Fryer battery connected to correct supply voltage and properly grounded.

      NOTE: Separate connections are required for the fryer controls and the filtering system controls.

   B. Gas supply valve on and gas combination valve "knob" turned to on.

   C. Power switch to the fryer section in the off position.

   D. Frying oil at proper level in fry tank and below last set point temperature used.

   E. Cooking control is setup properly and ready to use.

   F. Manual drain valve closed (drain valve interlock switch N.O. is closed).

   G. High limit thermostat closed.
2. Press power on switch.
   A. Power to terminal 5 (com) on left and right basket relays.

   B. 24VAC transformer 1T energized.
3. Cooking control powers on, initializes and performs a diagnostic self check.

NOTE: If the control passes self check, then the outputs are energized and operation sequence continues. If control does not pass self test, the control will display the appropriate message for the problem, disable the keypad and the electronic alarm will sound continuously. Refer to "TROUBLESHOOTING".

   A. Ignition module is powered (24VAC), initializes and generates spark at ignitor.

   1) Pilot voltage (PV) N.O. contacts close, pilot valve energized at positive (+) terminal and opens for gas flow to pilot.

      a. Pilot flame established. A micro amp "flame sense" current is rectified to ignition module through ignitor cable and sparking stops.

      b. Main voltage (MV) N.O. contacts close and provides ignition status input signal (24VAC) to cooking control at pin E1-6.

         NOTE: If pilot ignition is not established within the first several seconds of ignition trial time, the cooking control displays a message indicating "pilot out" or "ignition failure" as the ignition module continues to generate a spark at the ignitor. If pilot is not established within 90 seconds of the ignition module being energized, the ignition module locks out power to the gas valve. A message is displayed by the control indicating "ignition lockout"; keypad is disabled and the electronic alarm will sound continuously. The system remains locked out until the power switch is cycled to reset the system and re-start the ignition trial cycle.
4. Cooking control evaluates the input from: Ignition status at pin E1-6; Drain valve interlock at pin E1-5; And temperature probe at pins E1-3 and E1-4 (high & low).
   A. If the inputs to the control are valid and the frying oil temperature is below set point, the heat output (24VAC) at pin E1-8 is then activated and power is applied to heat control Triac.

      1) Heat control Triac energized and supplies voltage to gas valve TH terminal.

      a. Main gas valve energized and opens for gas flow to burners.

      b. Burners light and begin heating frying oil in fry tank.

         NOTE: As long as the ignition control module senses a pilot flame, the internal main voltage (M V) contacts (N.O.) on the ignition module remain closed, and main gas valve stays on.
5. Frying oil reaches set temperature.
   A. Cooking control de-activates the heat output (24VAC) at pin E1-8 and power is removed from heat control Triac.

      1) Main gas valve de-energized and closes.

         a. Gas flow stops and burners go out.

6. Cooking control cycles heat output on frying oil temperature until power switch is turned off; Ignition input status is removed; Drain valve interlock input status is removed; temperature probe input is outside acceptable limits or a high limit condition occurs.

NOTE: Steps 6A and 6B discuss open high limits. For additional information on cooking control error messages, refer to “TROUBLESHOOTING”.

A. If frying oil reaches 415°F or higher, the cooking control de-activates the heat output and basket lift outputs, cooking timers are cancelled (if active), keypad is disabled, display indicates “HI”, and the electronic alarm will sound continuously. Turn power switch off to silence the alarm. Normal operation resumes when temperature drops below 415°F.

B. If frying oil reaches 450°F, the high limit thermostat opens, power is removed from the pilot valve and closes to stop pilot gas flow.

1) Ignition trial cycle will start but pilot will be unable to light. After several seconds of ignition trial time, the cooking control displays a message indicating “pilot out” or “ignition failure” as the ignition module continues to generate a spark at the ignitor. After 90 seconds, the ignition module locks out power to the gas valve. With the ignition status input removed from cooking control, a message is displayed by the control indicating “ignition lockout”; keypad is disabled and the electronic alarm will sound continuously. Turn power switch off to silence the alarm and reset the system. Normal operation will resume when the temperature drops below 415°F.

Kleenscreen Filtering System

Refer to wiring diagram 7410.

The filter valve handle and the discard valve handle are connected to a mechanical valve and switch assembly to route the flow of oil in the filtering system and supply power to the pump motor.

NOTE: The computer control contains a program feature that allows the operator to program a specific number of timed cooking cycles to complete then alert the operator to filter the frying oil/shortening. When the actual cooking count reaches the filter count setting, “FILTER” will flash in the right display when fryer is idle. Normal fryer operation continues without a cooking lockout. This feature can also be disabled. Refer to Installation & Operation manual for specific instructions on filtering.

1. Conditions

A. Fryer connected to correct supply voltage and is properly grounded .

NOTE: Separate connections are required for the fryer controls and the filtering system controls.

B. Power switch to fryer section turned off.

C. Frying oil between 300°F and 350°F.

D. Filter drawer assembly installed properly.

E. Filter power switch turned off.

F. Filter valve handle (red) retracted.

1) Filter valve switch N.O. contacts open.

G. Discard valve handle (white) retracted.

1) Discard valve switch N.O. contacts open.

NOTE: On computer control fryer’s, the control should be setup properly and ready to use.

2. Turn the power switch on, to the fryer section to be filtered.

3. Set cooking control between 300°F (minimum) and 350°F (maximum).

NOTE: Oil should not be filtered outside of this temperature range. At lower temperatures the oil is thicker which may increase filtering time and place a greater load on the pump. At higher oil temperatures, oil seal life is decreased.

A. Allow oil to cycle at set temperature for approximately 10 minutes.

NOTE: If using solid shortening, once it has melted, stir the oil to eliminate any sold shortening in cold zone of the fry tank.

4. Solid State Control:

A. Turn the power switch off, to the fryer section to be filtered.

B. Open the drain valve to the fryer section in need of filtering and drain the frying oil/shortening into filter tank.

NOTE: If using solid shortening, allow hot shortening to stand in filter tank for approximately 6 minutes prior to filtering.

NOTE: Drain valve interlock contacts open and the position of the drain valve is indicated to the cooking control.

C. Turn filter power switch on.

1) Switch pilot light comes on.

D. Extend Filter valve handle of the same fryer section.

1) Filter valve switch N.O. contacts close.

a. Power supplied to pump motor.

E. Pump motor circulates oil through filter until power is removed.

F. When the oil filtering process is completed, close the manual drain valve to the fryer and allow the fry tank to refill.

NOTE: Drain valve interlock contacts close and the position of the drain valve is indicated to the cooking control.

G. When all filtered oil is returned to the fryer, retract the filter valve handle.

1) Power is removed from pump motor.

H. Turn filter power switch off.

NOTE: If using solid shortening, when all filtered oil is returned to the fry tank and filter power switch is off, open the filter drawer approximately one inch. Allow the remaining shortening in the line to drain into the filter tank to prevent possible clogging after the shortening cools and solidifies. Close the filter drawer when complete.

5. Computer Control:

A. The number of cooking cycle's reach the filter count setting.

B. The right side display indicates "FILTER" and will flash when the fryer is idle.

NOTE: A manual filter cycle can also be done at any time by following the procedure outlined under "SOLID STATE CONTROL" in steps 4B thru 4H. Display will show "DRAINING" "TURN OFF". If desired, the filter timer can still be initiated.

C. Open the drain valve to the fryer section in need of filtering and drain the frying oil/shortening into filter tank.

NOTE: If using solid shortening, allow hot shortening to stand in filter tank for approximately 6 minutes prior to filtering.

NOTE: Drain valve interlock contacts open and the position of the drain valve is indicated to the cooking control.

NOTE: Steps 5D thru 5G should be performed in immediate succession to start the filtering process and the filter timer.

D. Turn filter power switch on.

1) Switch pilot light comes on.

E. Extend Filter valve handle of the same fryer section.

1) Filter valve switch N.O. contacts close.

a. Power supplied to pump motor.

F. Pump motor circulates oil through filter until power is removed.

G. Press either "TIME" key to start filter timer countdown.

1) "FILTER" and the remaining filter time are displayed.

H. Filter time expires:

1) "FILTER" "DONE" is displayed and the electronic alarm will sound for approximately 5 seconds. Display then changes to "CLOSE" "DRAIN".

I. Close the drain valve:

1) "TURN OFF" is displayed.

NOTE: Closing the drain valve before filter time expires will stop the filter timer but will not reset the filter counts. The "FILTER" prompt can only be reset by completing a filtering cycle or disabling the function in programming mode. Cycling the power will not reset this prompt.

NOTE: Drain valve interlock contacts close and the position of the drain valve is indicated to the cooking control.

J. When all filtered oil is returned to the fryer, retract the filter valve handle.

1) Power is removed from pump motor.

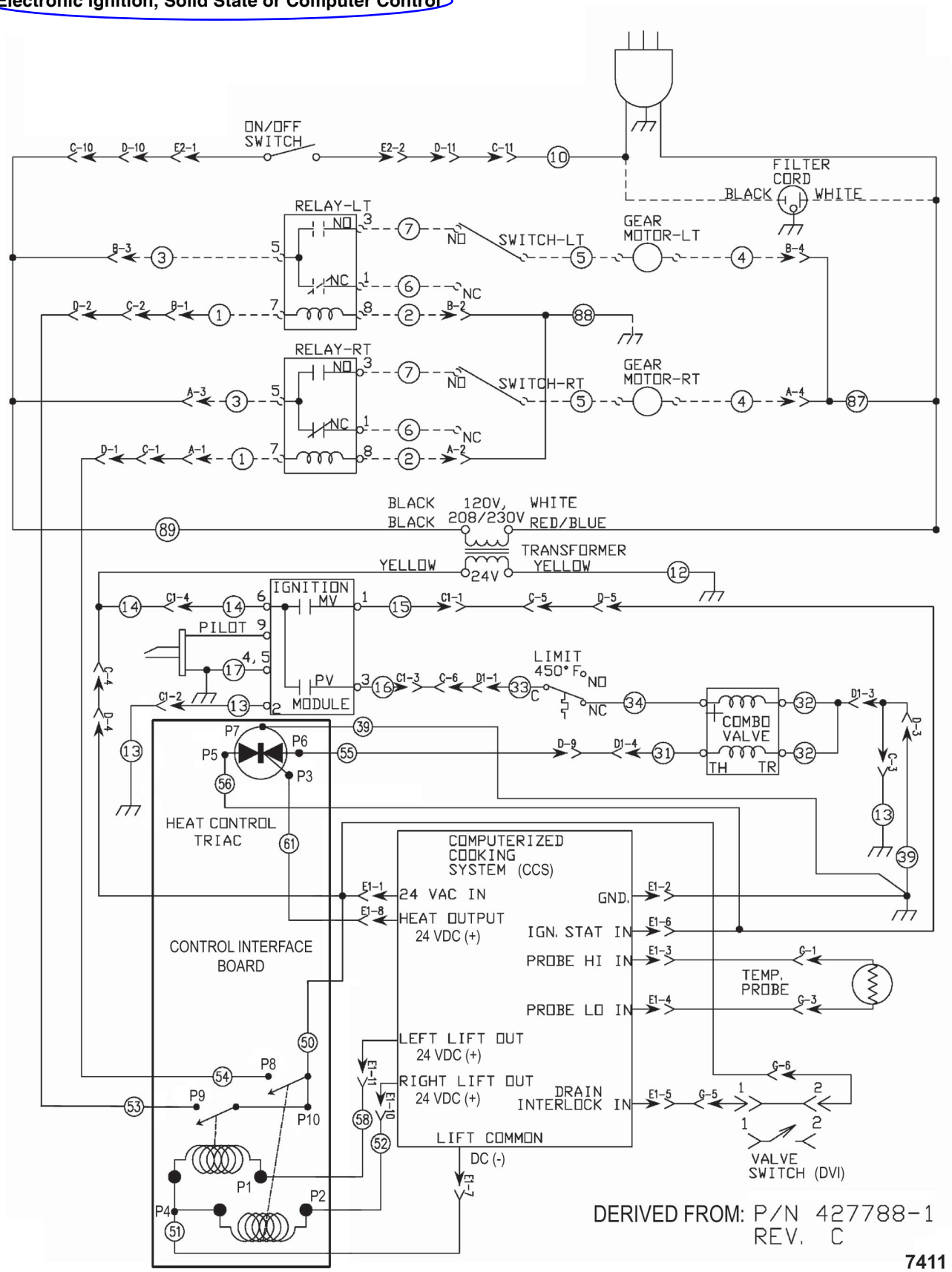
K. Turn filter power switch off.

NOTE: If using solid shortening, when all filtered oil is returned to the fry tank and filter power switch is off, open the filter drawer approximately one inch. Allow the remaining shortening in the line to drain into the filter tank to prevent possible clogging after the shortening cools and solidifies. Close the filter drawer when complete.

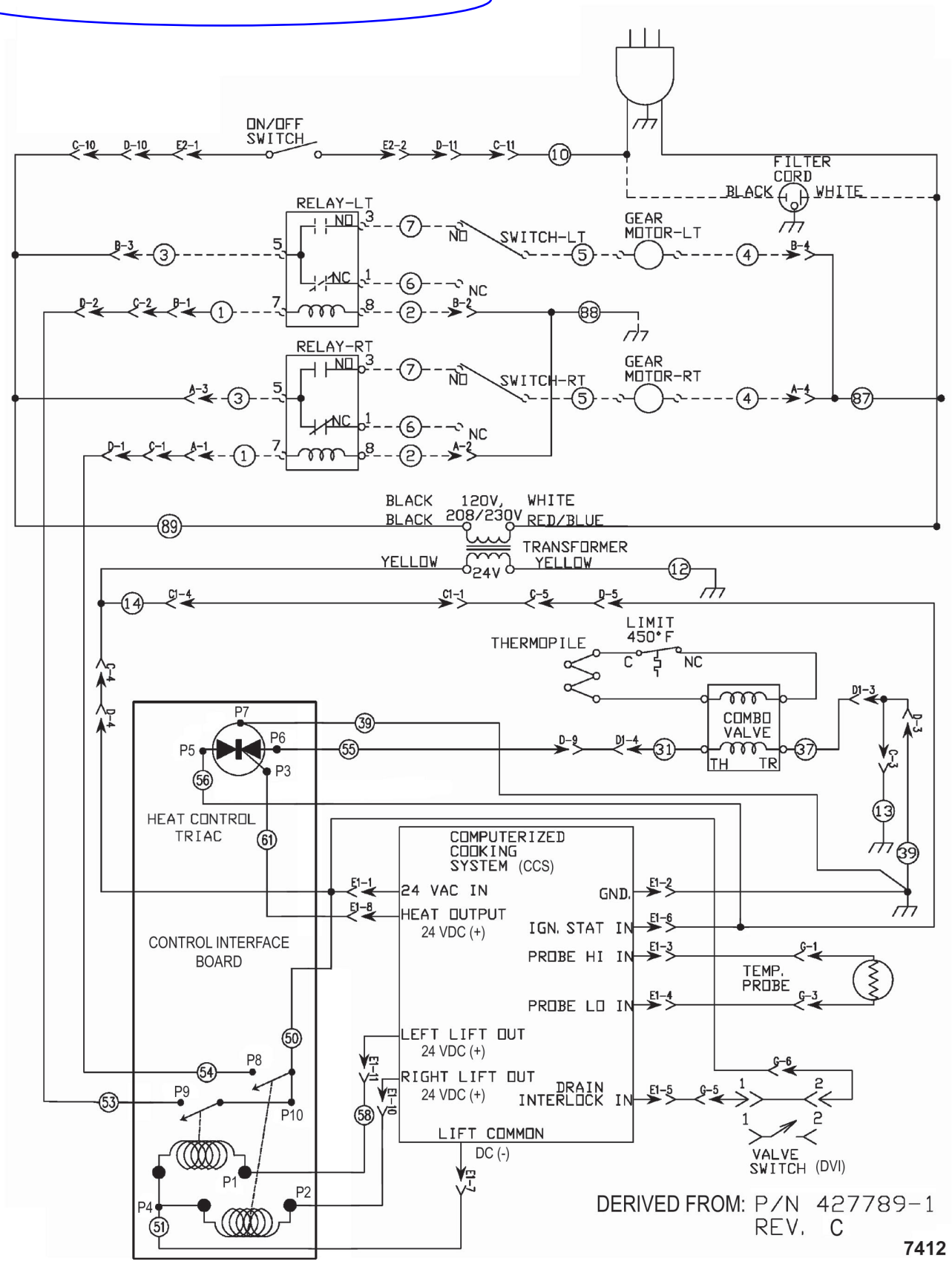
L. Turn the power switch off.

SCHEMATIC DIAGRAMS

Electronic Ignition, Solid State or Computer Control

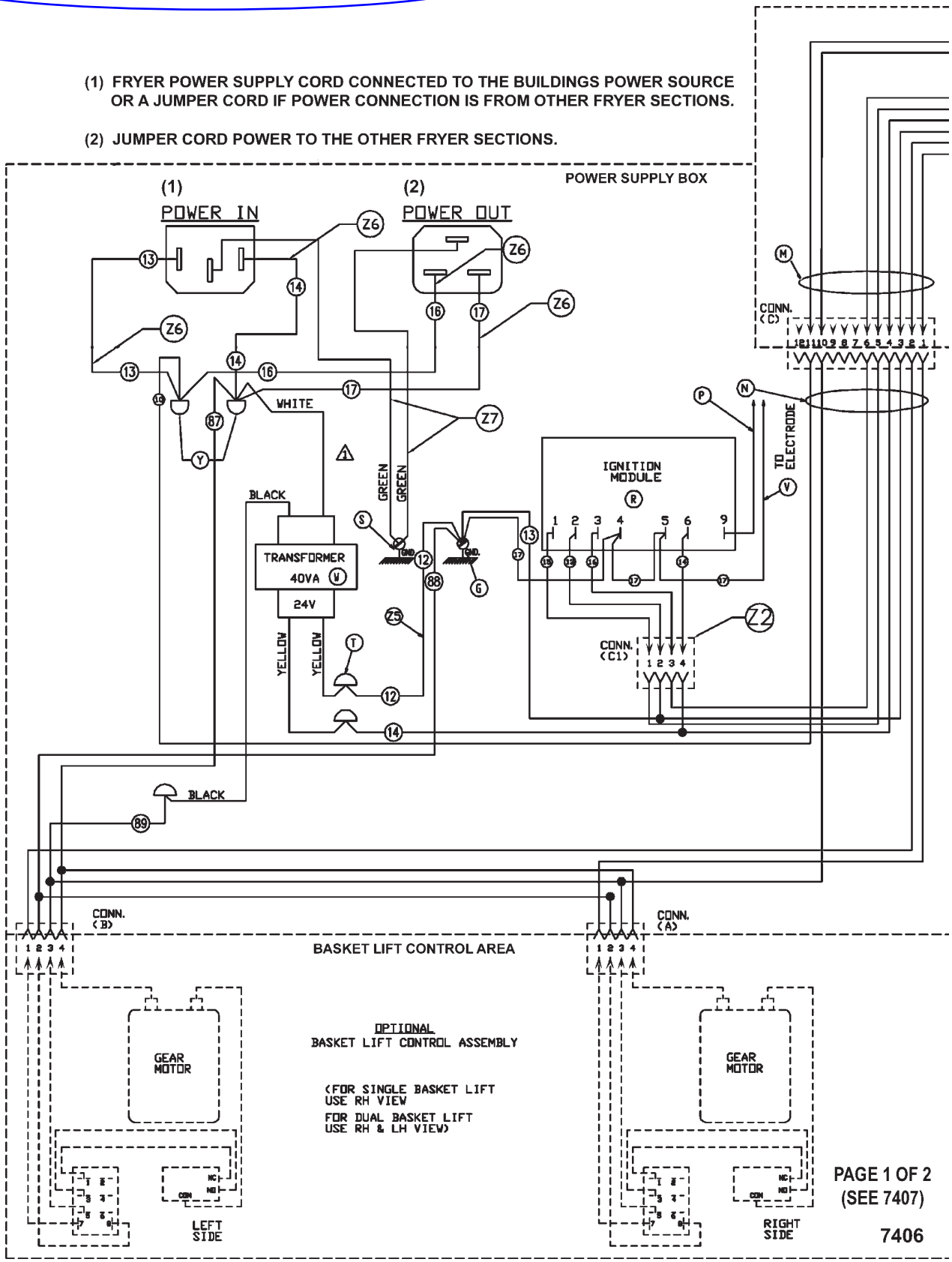


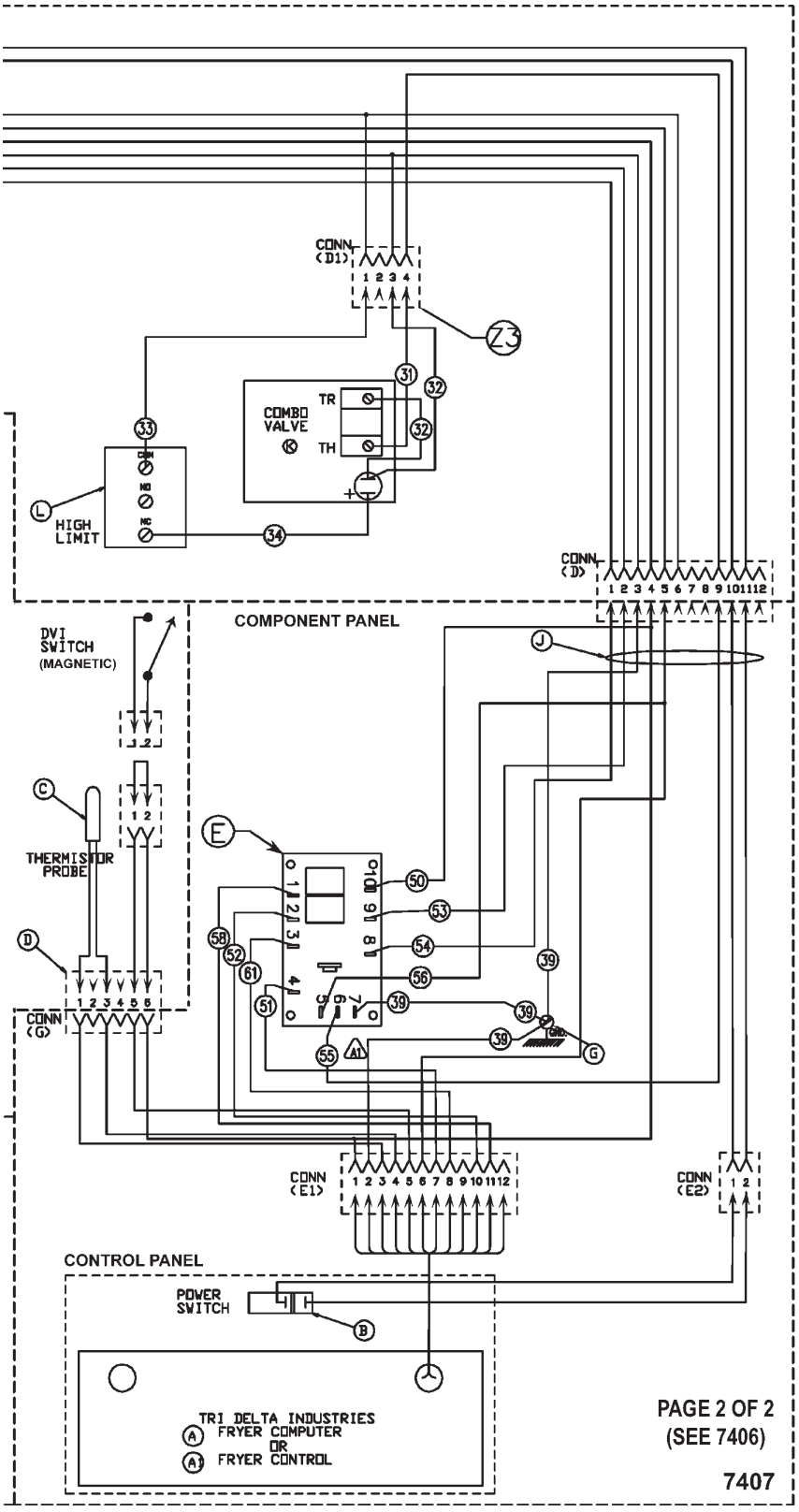
Electronic Ignition, Solid State or Computer Control



WIRING DIAGRAMS

Electronic Ignition, Solid State or Computer Control





req.	QNTY.	ET.	DESCRIPTION	MFR.
2	2	Z7	WIRE ASSEMBLY (GREEN)	–
4	4	Z6	WIRE ASSEMBLY [13,14,16,17]	–
1	1	Z5	WIRE ASSEMBLY [12]	–
2	2	Z4	WIRE ASSEMBLY [8,9]	–
1	1	Z3	MANIFOLD HARNESS	–
1	1	Z2	HARNESS-IGNITION MODULE	–
1	1	Z1	OPTIONAL FILTER SUPPLY CORD	–
2	2	Y	WIRE NUT YELLOW	–
1	1	W	24V 40VA TRANSFORMER 120 VOLT / 240 VOLT	
1	1	V	LEAD ASSEMBLY [17]	–
3	3	T	WIRE NUT	–
1	1	S	GROUND LUG	–
1	1	R	IGNITION MODULE	–
1	1	P	IGNITOR CABLE	–
1	1	N	POWER HARNESS	–
1	1	M	MAIN HARNESS	–
1	1	L	HI-LIMIT	–
1	1	K	COMBO VALVE NAT / LP	
1	1	J	INTERFACE HARNESS	–
1	2	G	TERMINAL, STATIONARY	–
1	1	E	CONTROL INTERFACE TRIDELTA	–
1	1	D	D.V.I. HARNESS ASSEMBLY	–
1	1	C	THERMISTOR	–
1	1	B	ROCKER SWITCH ASSEMBLY	–
1	–	A1	TDI CONTROL	–
–	1	A	TDI COMPUTER	–

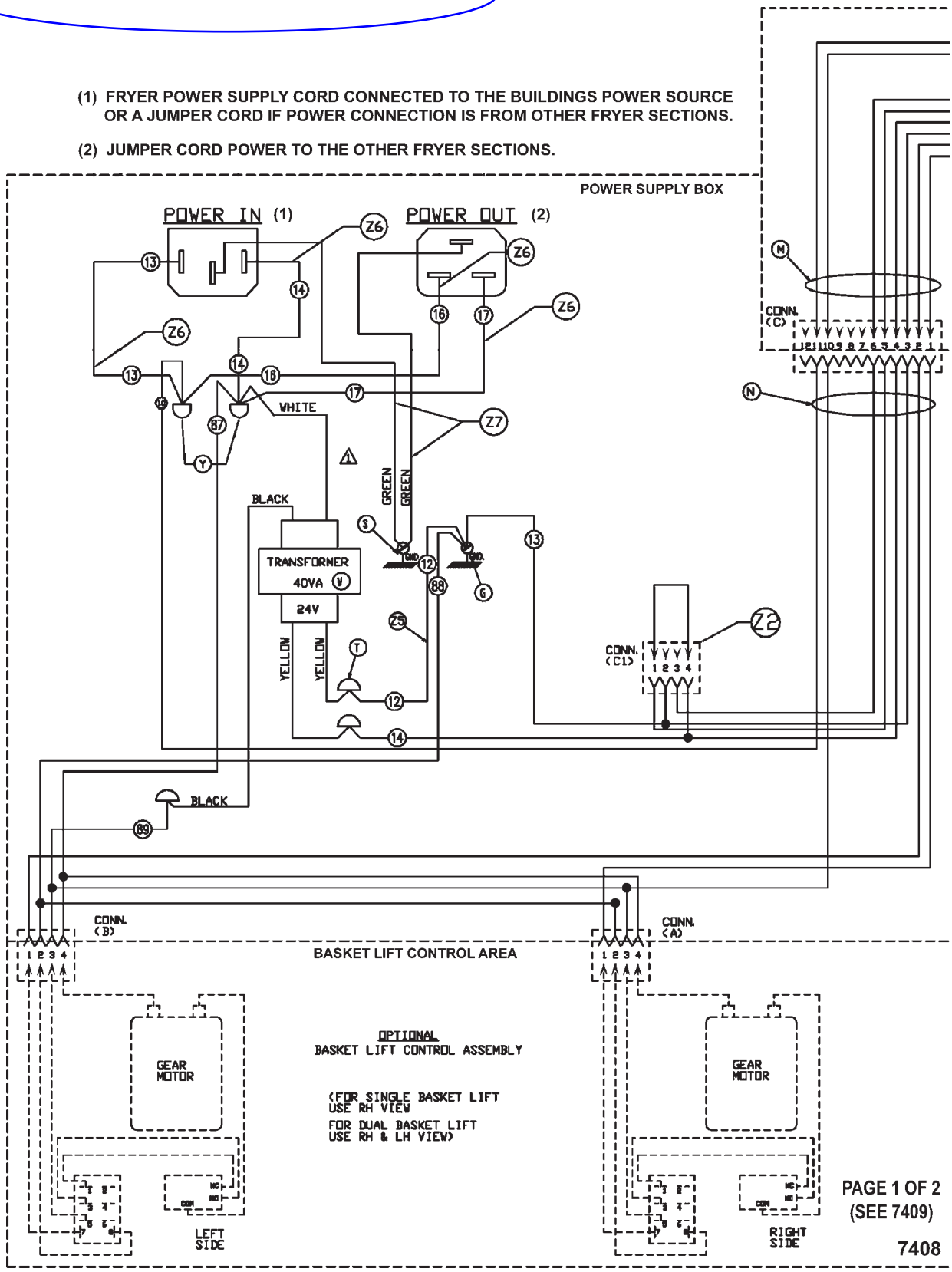
RD MODELS
RC MODELS

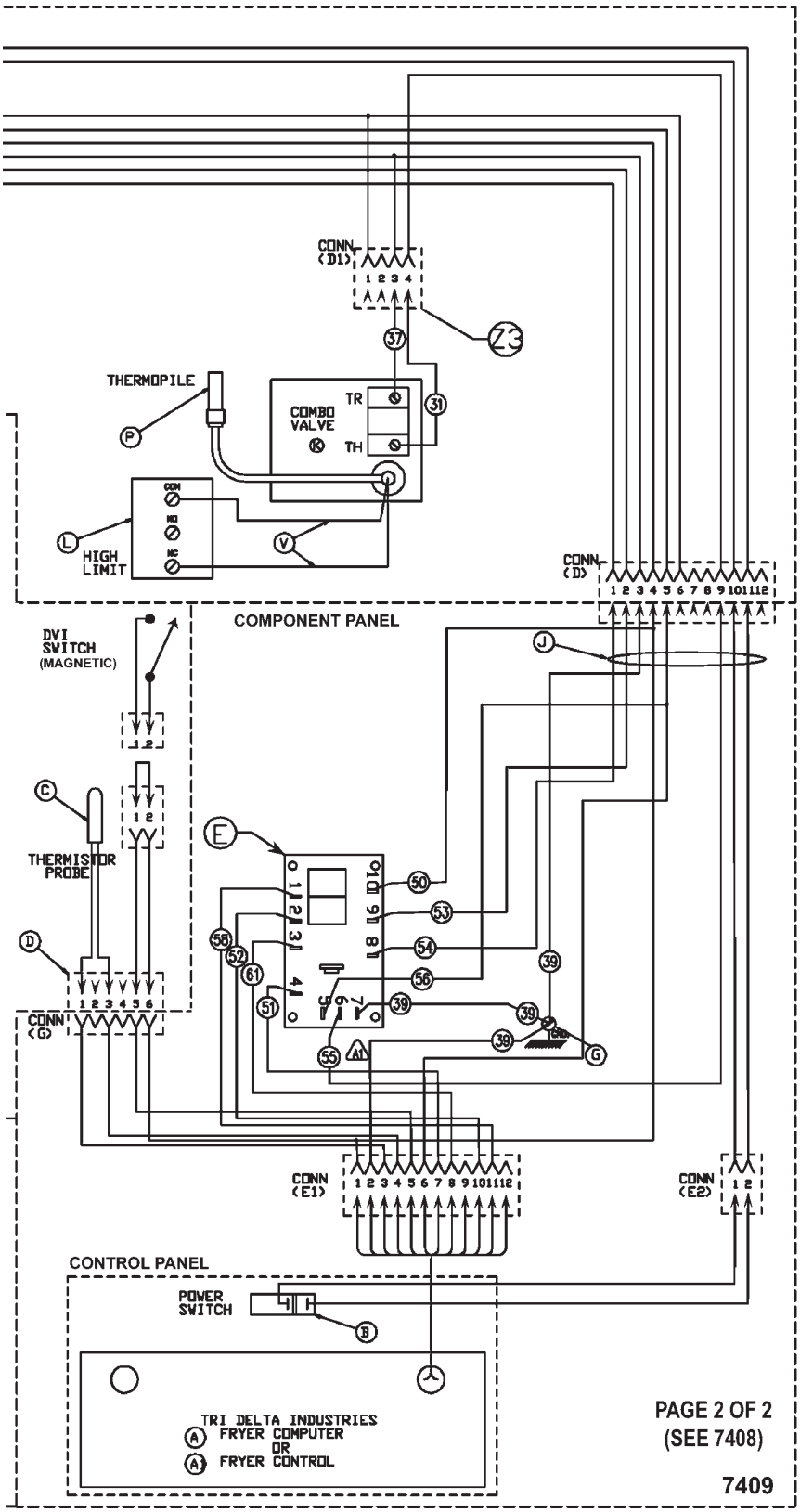
WIRING INFORMATION
FOR UNITS LISTED

CCS FRYERS W/E.I. ,W & WO/LIFTS
WIRING DIAGRAM

DRAWN BY _____ APPROVED BY _____ SHEET 1 OF 1
SCALE NONE
DERIVED FROM: D427616-1 REV B

Manual Pilot Ignition, Solid State or Computer Control





req.	RQ.	IT.	DESCRIPTION	DIN.
2	2	Z7	WIRE ASSEMBLY (GREEN)	–
4	4	Z6	WIRE ASSEMBLY [13,14,16,17]	–
1	1	Z5	WIRE ASSEMBLY [12]	–
2	2	Z4	WIRE ASSEMBLY [8,9]	–
1	1	Z3	MANIFOLD HARNESS	–
1	1	Z2	HARNESS–IGNITION MODULE	–
1	1	Z1	OPTIONAL FILTER SUPPLY CORD	–
2	2	Y	WIRE NUT YELLOW	–
1	1	W	24V 40VA TRANSFORMER 120 VOLT / 240 VOLT	
1	1	V	CABLE ASSEMBLY [BUTTERFLY]	–
3	3	T	WIRE NUT	–
1	1	S	GROUND LUG	–
1	1	P	THERMOPILE	–
1	1	N	POWER HARNESS	–
1	1	M	MAIN HARNESS	–
1	1	L	HI–LIMIT	–
1	1	K	COMBO VALVE NAT / LP	
1	1	J	INTERFACE HARNESS	–
1	2	G	TERMINAL, STATIONARY	–
1	1	E	CONTROL INTERFACE, TRIDELTA	–
1	1	D	D.V.I. HARNESS ASSEMBLY	–
1	1	C	THERMISTOR	–
1	1	B	ROCKER SWITCH ASSEMBLY	–
1	–	A1	TDI CONTROL	–
–	1	A	TDI COMPUTER	–

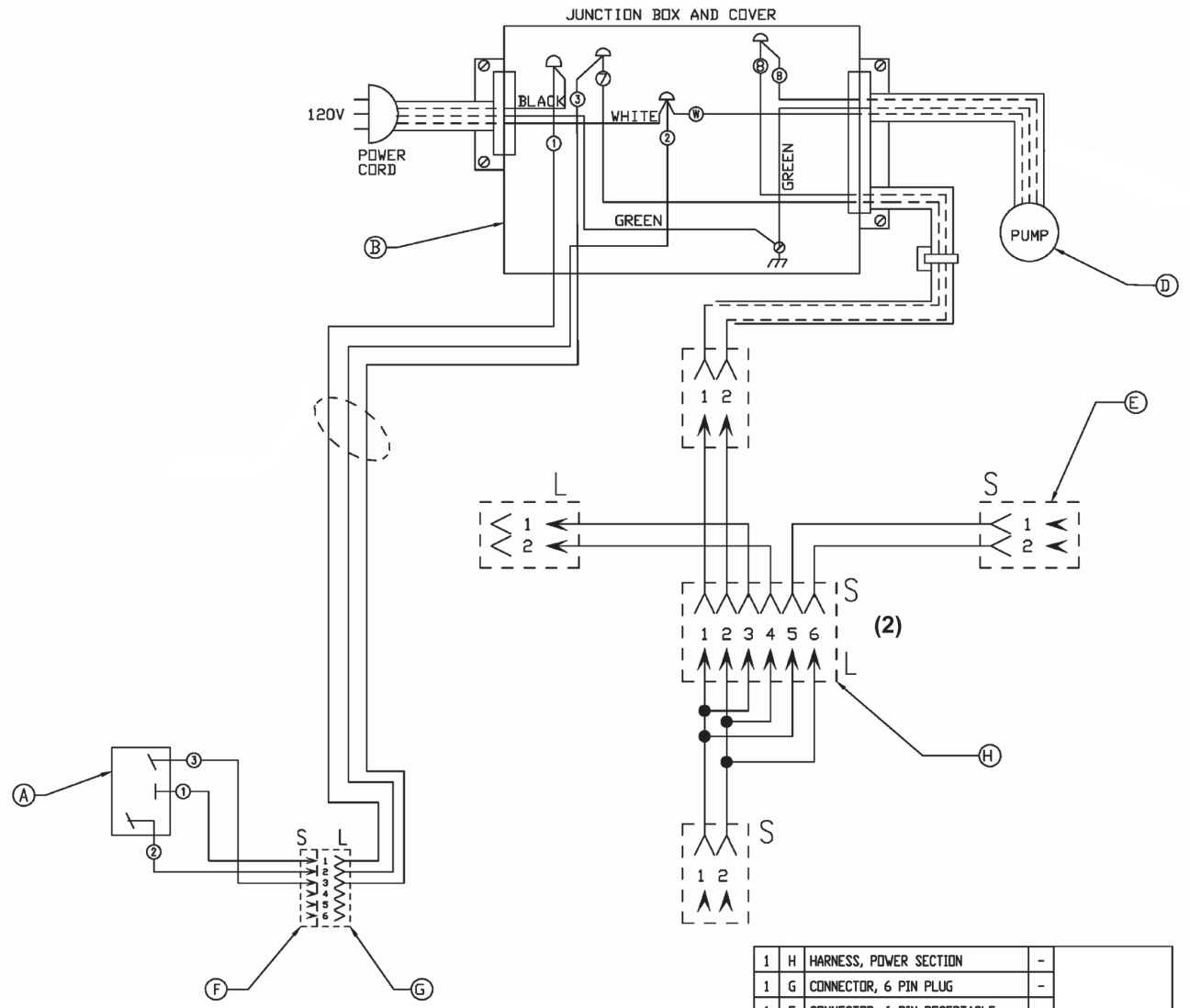
RD MODELS
RC MODELS

WIRING INFORMATION
FOR UNITS LISTED

WIRING DIAGRAM
CCS FRYER WO/ELECT. IGN. & W & WO/DUAL B.L.

DRAWN BY _____
APPROVED BY _____
SHEET 1 OF 1
DERIVED FROM: D427616-2
SCALE NONE
REV B

Junction Box, Kleenscreen Filtering System



REQ.	IT.	DESCRIPTION	FIN.
1	H	HARNESS, POWER SECTION	-
1	G	CONNECTOR, 6 PIN PLUG	-
1	F	CONNECTOR, 6 PIN RECEPTACLE	-
1	E	HARNESS, 'T'	-
1	D	MOTOR, PUMP 50/60 HZ. 120 V. / 208 V. / 230 V.	
1	B	POWER BOX ASSEMBLY	-
1	A	SWITCH, LIGHTED ROCKER	-

WIRING INFORMATION
FOR UNITS LISTED

WIRING DIAGRAM 120,208,230 V. 50/60 HZ.
FRYING OIL/SHORTENING FILTRATION SYSTEM

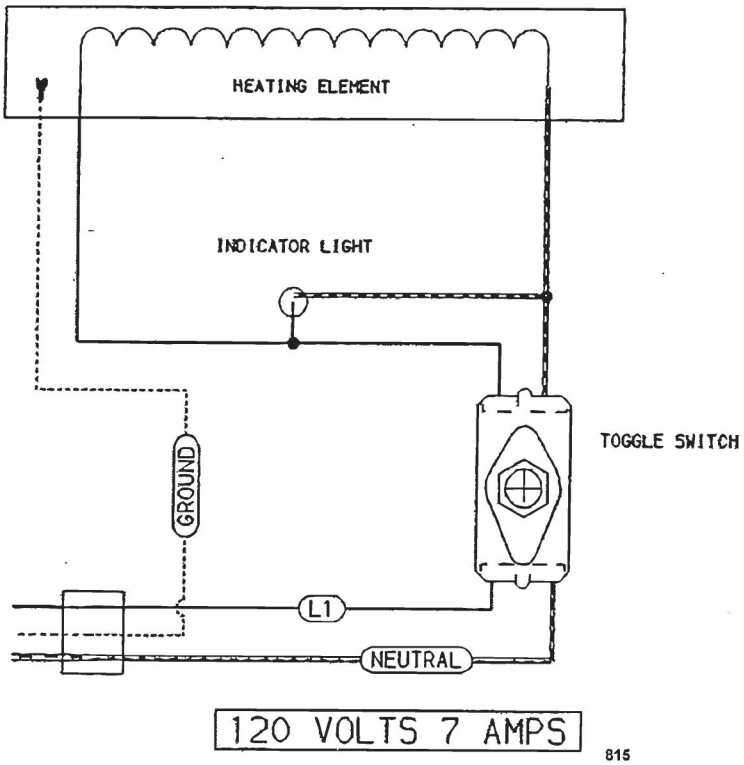
DRAWN BY _____ SCALE NONE
APPROVED BY _____ DERIVED FROM: D426767 REV. B
SHEET 1 OF _____

(1) Separate power supply cord for pump motor.

(2) S= Short Connector; L= Long Connector.

7410

Frymate (Dump Station)



TROUBLESHOOTING

ALL MODELS

SYMPTOMS	POSSIBLE CAUSES
No spark to ignite pilot gas; Display lit.	1. Drain valve switch open (alarm message displayed); or switch malfunction. 2. Shorted electrode or an improper ground on ignitor/ flame sense. 3. Ignitor cable open. 4. Interconnecting wiring malfunction. 5. Ignition Module malfunction.
Sparks but gas does not ignite; Display lit.	1. Gas combination valve off or inoperative. 2. Manual gas valve closed. 3. Gas supply off or insufficient gas pressure. 4. High limit thermostat open. 5. Interconnecting wiring malfunction. 6. Ignition Module malfunction.
Gas pilot ignites but will not maintain flame.	1. Ignitor lead connections malfunction. 2. Ignitor ground inoperative. 3. Ignitor/flame sense misaligned or malfunction. 4. Insufficient gas pressure. 5. Incorrect polarity from transformer to Ignition module.
Gas burner(s) ignite but will not maintain flame.	1. Gas pressure incorrect. 2. Gas orifice obstructed or incorrect. 3. Burner malfunction. 4. Gas pilot malfunction.
Excessive or low heat.	1. Incorrect temperature offset selected. 2. Temperature probe malfunction. 3. Cooking control malfunction. 4. Interface board malfunction. 5. Gas pressure incorrect. 6. Gas orifice obstructed or incorrect.
Intermittent problems.	1. High ambient temperatures. 2. Wiring connections loose.
No power to cooking control, fryer does not heat.	1. Power switch off or malfunction. 2. Main circuit breaker off. 3. Transformer inoperative. 4. Interconnecting wiring malfunction.
High limit thermostat shutting off gas burner.	1. Frying oil level below minimum fill line. 2. Probe malfunction. 3. Control malfunction.
Excessive time to melt shortening (more than 45 minutes).	1. Melt cycle timing incorrect. 2. Insufficient gas pressure. 3. Gas orifice plugged or obstructed. 4. Probe malfunction. 5. Control malfunction.

SOLID STATE CONTROL

The following alarms take precedence over any other controller mode or function (except drain valve open).

ALARMS	DESCRIPTION
OPEN PROBE	If an open probe is detected, the heat demand (heat on) and basket lift outputs are disabled. Any cooking in progress is cancelled and all operator buttons are disabled. The display shows “Prob” and the electronic alarm will sound continuously. NOTE: A temperature of less than 40°F is an open probe equivalent.
SHORTED PROBE	If a shorted probe is detected, the heat demand (heat on) and basket lift outputs are disabled. Any cooking in progress is cancelled and all operator buttons are disabled. The display shows “HI” and the electronic alarm will sound continuously. NOTE: A temperature of 460°F or greater is a shorted probe equivalent.
HI TEMPERATURE	If the temperature is greater than or equal to 415°F, the heat demand (heat on) is disabled. Any cooking in progress is cancelled and all operator buttons are disabled. The display shows “HI” and the electronic alarm will sound continuously. Normal fryer operation resumes when the temperature drops below the high temperature alarm level.
IGNITION STATUS	If this input is not active (24VAC = active), the display will show “FIrE” “OUt” (for gas pilot out). If the input remains inactive for greater than 90 seconds, the display will show “Ign” “LoC” (for ignition lockout), the electronic alarm will sound continuously, and the controller will be disabled (all outputs including heat demand off) until power is cycled.
DRAIN VALVE INTERLOCK (DVI)	When drain valve is opened, the DVI switch contacts open, and the 24VAC input to the controller is removed. The heat demand (heat on) and basket lift outputs are disabled. Any cooking in progress is cancelled and all operator buttons are disabled. The display will alternate between “drn” “tUrn” “oFF” for 3 seconds each in a continuous loop. When the drain valve is closed, the DVI switch contacts close, and the 24VAC input to the controller is restored. The heat demand (heat on) and all operator buttons will remain disabled; and the display will alternate between “tUrn” “oFF” for 3 seconds each in a continuous loop until power is cycled.

COMPUTER CONTROL

The following alarms take precedence over any other controller mode or function (except drain valve open).

ALARMS	DESCRIPTION
OPEN PROBE	If an open probe is detected, the heat demand (heat on) and basket lift outputs are disabled. Any cooking in progress is cancelled and all operator buttons are disabled. The display shows “PROBE OPEN” and the electronic alarm will sound continuously. NOTE: A temperature of less than 40°F is an open probe equivalent.
SHORTED PROBE	If a shorted probe is detected, the heat demand (heat on) and basket lift outputs are disabled. Any cooking in progress is cancelled and all operator buttons are disabled. The display shows “PROBE SHORT” and the electronic alarm will sound continuously. NOTE: A temperature of 460°F or greater is a shorted probe equivalent.
HI TEMPERATURE	If the temperature is greater than or equal to 415°F, the heat demand (heat on) is disabled. Any cooking in progress is cancelled and all operator buttons are disabled. The display shows “HI TMP” and the electronic alarm will sound continuously. Normal fryer operation resumes when the temperature drops below the high temperature alarm level.
IGNITION STATUS	If this input is not active (24VAC = active), the display will show “PILOT OUT” (for gas pilot out). If the input remains inactive for greater than 90 seconds, the display will show “Ign” “LoC” (for ignition lockout), the electronic alarm will sound continuously, and the controller will be disabled (all outputs including heat demand off) until power is cycled.
DRAIN VALVE INTERLOCK (DVI)	When drain valve is opened, the DVI switch contacts open, and the 24VAC input to the controller is removed. The heat demand (heat on) and basket lift outputs are disabled. Any cooking in progress is cancelled and all operator buttons are disabled. The display will show “DRAINING” “TURN OFF”. If the filter prompt is active, “DRAINING” “FILTER” is displayed; if the dispose prompt is active, “DRAINING” “DISPOSE” is displayed. When the drain valve is closed, the DVI switch contacts close, and the 24VAC input to the controller is restored. The heat demand (heat on) and all operator buttons will remain disabled; and the display will show “TURN OFF” until power is cycled.

SOLID STATE OR COMPUTER CONTROL HARNESS PIN-OUTS

PIN NO.	INPUTS	PIN NO.	OUTPUTS[3]
E1-1	24VAC Hot	E1-8	24VDC (+) Heat Demand
E1-2	24VAC Neutral[1]	E1-9	Not used at this time[2]
E1-3	Probe High (red)	E1-10	24VDC (+) Left Basket Lift
E1-4	Probe Low (white)	E1-11	24VDC (+) Right Basket Lift
E1-5	Drain Valve Interlock (24VAC) N.O.	E1-12	No connection
E1-6	Ignition Status (24VAC)	—	—
E1-7	Relay DC (-) Common	—	—

NOTES: 1. Connected to ground internally. 2. Available for external buzzer output (24VDC). 3. Outputs to Interface Control Board.

INTERFACE CONTROL BOARD PIN-OUTS

PIN NO.	INPUTS	PIN NO.	OUTPUTS[3]
P1	24VDC Left Basket Lift	P6	Heat Demand Triac (24VAC)[2]
P2	24VDC Right Basket Lift	P7	System Ground
P3	24VDC Heat Demand Control	P8	24VAC Left Basket Lift[3]
P4	Control Common (-)	P9	24VAC Right Basket Lift[3]
P5	Heat Demand Triac (24VAC)	—	—
P10	Relay Contacts (24VAC)[1]	—	—

NOTES: 1. Relays connected internally. 2. To “TH” Terminal on gas valve (main). 3. To basket lift relay coils.

FRYMATE (DUMP STATION) WITH OPTIONAL HEATER

SYMPTOM	POSSIBLE CAUSES
No heat.	1. Unplugged. 2. Power switch off or inoperative. 3. Main circuit breaker off or open. 4. Malfunctioning heat assembly.

KLEENSCREEN FILTERING SYSTEM

SYMPTOM	POSSIBLE CAUSES
Oil not filtering, pump motor is on.	1. Filter screen plugged. 2. Clog in filter system lines. **NOTE:** If using solid shortening, when all filtered oil is returned to the fry tank and filter power switch is off, open the filter drawer approximately one inch. Allow the remaining shortening in the line to drain into the filter tank to prevent possible clogging after the shortening cools and solidifies. Close the filter drawer when complete. 3. Frying oil/Shortening below 300°F to “thick”. 4. Filter valve switch malfunction. 5. Filter valve mechanical malfunction. 6. Pump is inoperative.
Frying oil not discarding, pump motor on.	1. Filter screen plugged. 2. Clog in filter system lines. **NOTE:** If using solid shortening, when all filtered oil is returned to the fry tank and filter power switch is off, open the filter drawer approximately one inch. Allow the remaining shortening in the line to drain into the filter tank to prevent possible clogging after the shortening cools and solidifies. Close the filter drawer when complete. 3. Frying oil/Shortening below 300°F to “thick”. 4. Discard valve switch malfunction. 5. Discard valve mechanical malfunction. 6. Discard hose connection not fully engaged. 7. Pump is inoperative.
Pump motor is not running.	1. Filter power switch inoperative. 2. Filter/discard handle not extended. 3. Filter/discard valve switch malfunction. 4. Filter relay malfunction. 5. Pump motor inoperative. 6. Motor limit tripped (Reset).

CONDENSED SPARE PARTS LIST

KLEENSCREEN FILTER

PART NUMBER	DESCRIPTION	NOTES
411496-B4	Lighted Rocker Switch, Filter	
417792-1	Pump and Motor Assy, Kleenscreen™ Filter	
411497-A3	Relay, Filter Circuit, 24v Coil	

GR SERIES GAS FRYERS WITH TDI CONTROLS

PART NUMBER	DESCRIPTION	"D" SERIES	"C" SERIES	NOTES
427758-1	Cooking Computer		X	
427757-1	Cooking Control, Solid State	X		
427759-1	Control Interface Board (TDI)	X	X	
427755-G1	Rocker Switch Assy. (main power)	X	X	
419379-1	Temperature Probe (thermistor)	X	X [2]	
410840-2	High Limit Thermostat	X [1]	X [2]	
411500-12	Transformer, 120-24v	X [1]	X [2]	
417980-1	Ignition Control Module	X [1]	X [2]	
419359	Ignitor Cable	X [1]	X [2]	
414287-231	Lead Assembly - Ign. Sensor	X [1]	X [2]	
410841-28	Gas Valve (Nat) Elect. Ign.	X [1]	X [2]	
410841-29	Gas Valve (Lp), Elect. Ign.	X [1]	X [2]	
419316-1	Pilot (Nat) Elect. Ign.	X [1]	X [2]	
419316-2	Pilot (Lp), Elect Ign.	X [1]	X [2]	
418159-1	Cam Switch, Basket Lift	X [1]	X [2]	
418156-1	Gear Motor, Basket Lift	X [1]	X [2]	
416535-4	Relay, basket Lift, 24v	X [1]	X [2]	
426805-G1	Switch, Assy. (drain valve interlock)	X	X	
426732-1	Overlay, Cooking Computer		X	
427820-1	Overlay, Cooking Control, Solid State	X		

1 = COMMON TO ALL "D" SERIES (SOLID STATE CONTROL) FRYERS.
2 = COMMON TO ALL "C" SERIES (COMPUTER CONTROL) FRYERS.